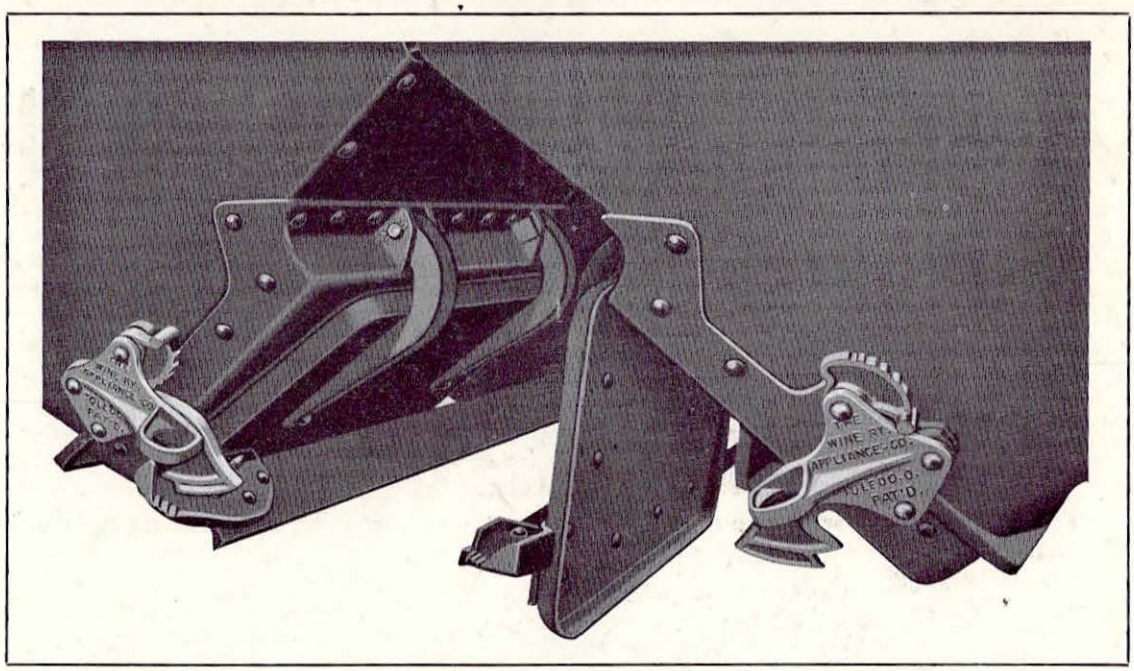
AUGUST 15, 1936

Railway Age

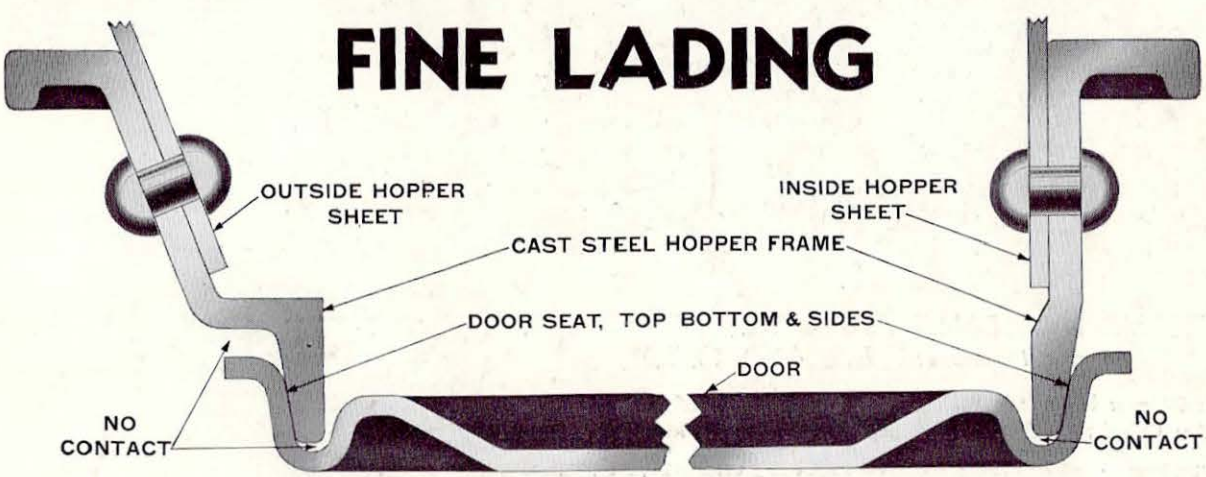
Founded in 1856

McCARTNEY LIBRARY
GENEVA COLLEGE

WINE HOPPER FRAMES

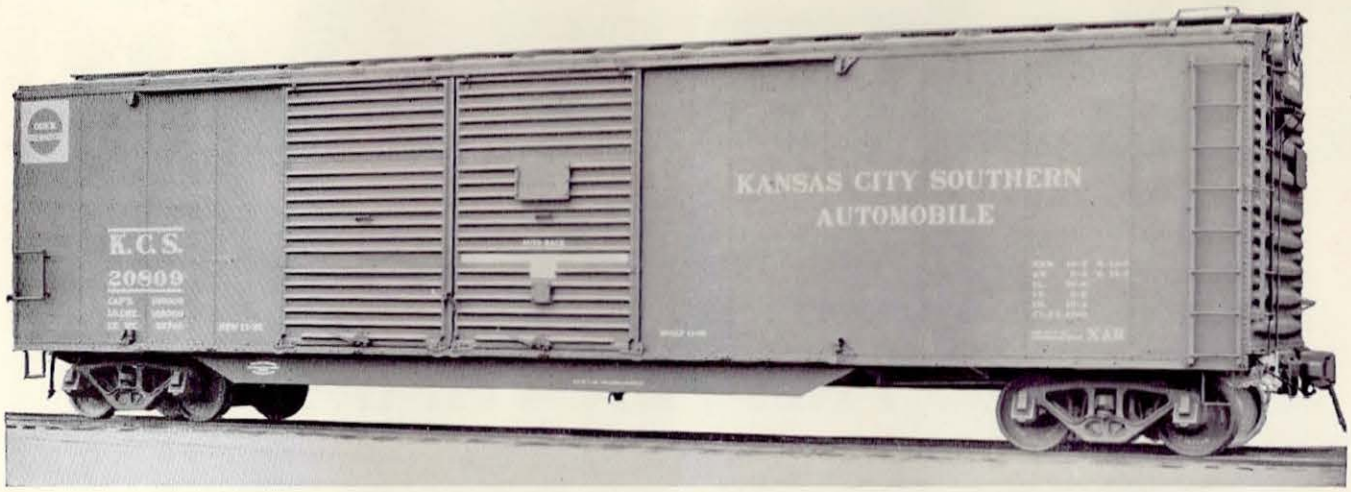


TIGHT DOORS TO HANDLE FINE LADING



CROSS SECTION OF DOOR FIT

THE WINE RAILWAY APPLIANCE CO. TOLEDO, OHIO.

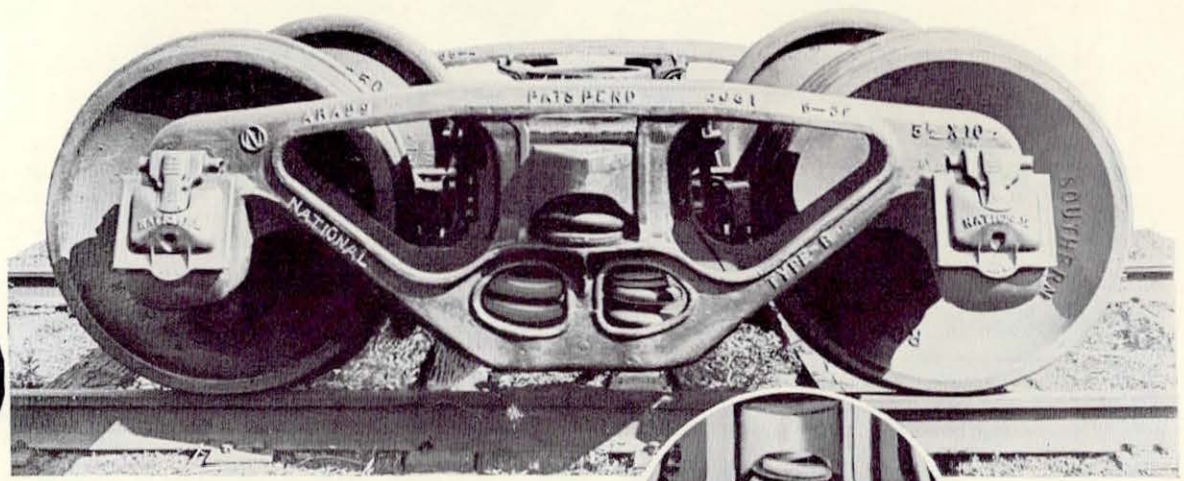


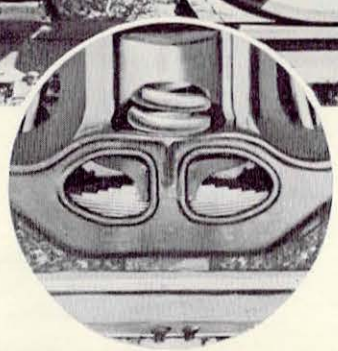
SMOOTHER RIDING
for the Higher Freight Speeds

NATIONAL Type B trucks have greater spring capacity — oversolid protection — vertical flexibility — and spring cushioned lateral motion, resulting in smoother riding cars, and in the elimination of violent oscillations — thus avoiding expensive damage to both lading and equipment.

The Type B design also effects important savings in maintenance expenditures, because spring planks are not required — total weight is less — there are fewer separate parts — the life of springs is increased — and wheel changes can be readily made without disassembling any of the major members.

For these reasons — and because of lower initial costs — National Type B Trucks are well worthy of your careful consideration for new and old freight equipment.





The NATIONAL TYPE B TRUCK also permits the use of the well known combination of coil and leaf springs, without reduction of side clearance.

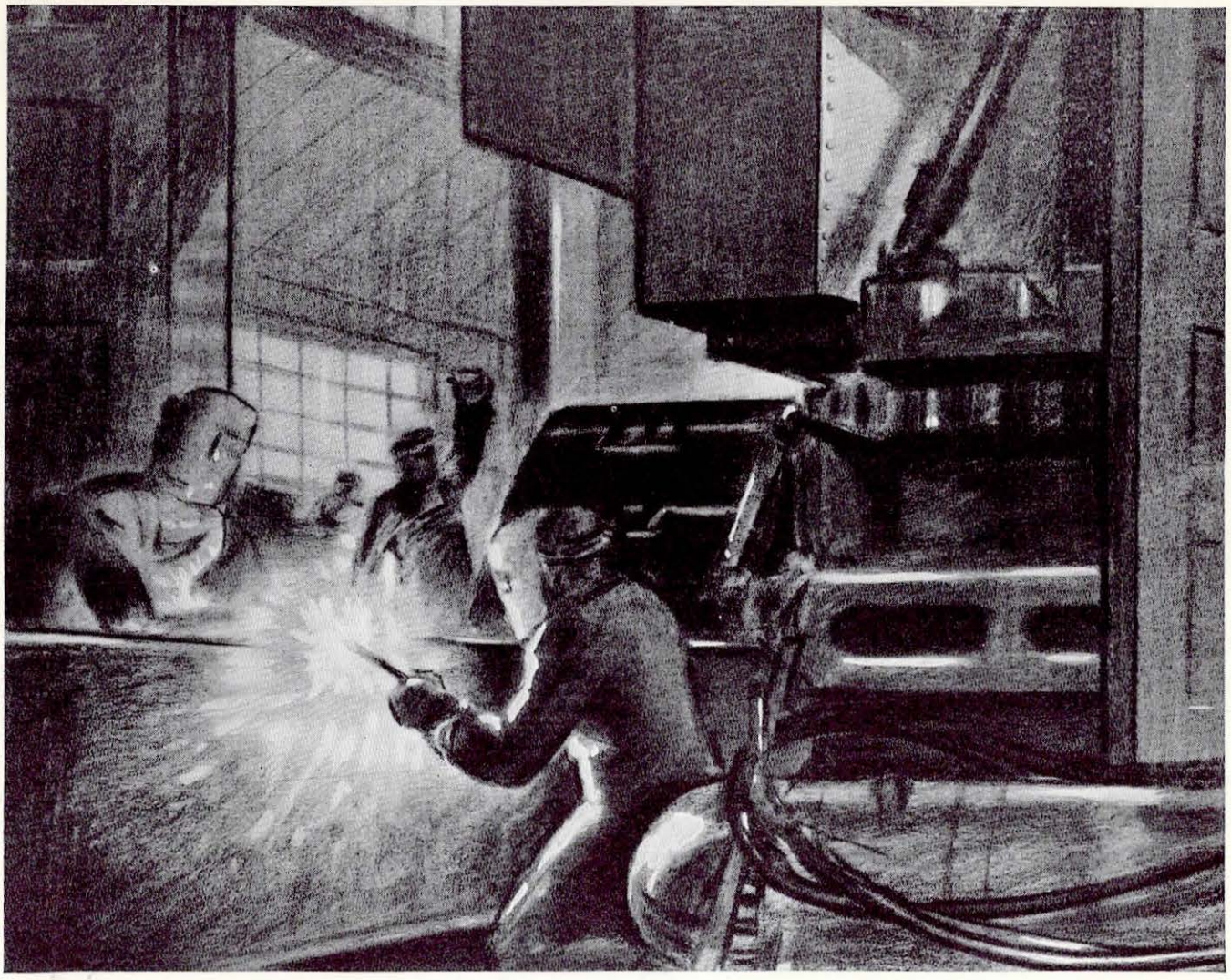
NATIONAL MALLEABLE AND STEEL CASTINGS CO.
General Offices: CLEVELAND, OHIO

Sales Offices: New York, Philadelphia, Chicago, St. Louis, San Francisco
Works: Cleveland, Chicago, Indianapolis, Sharon, Pa., Melrose Park, Ill.

Canadian Representatives: Railway and Power Engineering Corporation, Ltd., Toronto and Montreal

NATIONAL TYPE B TRUCKS

Published weekly by Simmons-Boardman Publishing Company, 1309 Noble Street, Philadelphia, Pa. Entered as second class matter January 4, 1933, at the Post Office at Philadelphia, Pa., under the Act of March 3, 1879.



Paring Useless Tons from Construction Equipment with INLAND Hi-Steel

The use of Inland Hi-Steel (High in Strength, High in Corrosion Resistance) cuts dead weight from 25% to 50% without reducing the strength of the structure.

This new, high strength alloy has a tensile strength of 70,000 to 75,000 lbs. and a yield point of from 55,000 to 60,000 lbs.—about twice the effective strength of carbon steel. It welds and otherwise fabricates as readily as carbon steel, and is remarkably uniform.

The alloys used in Hi-Steel make it resist corrosion several times longer than Carbon Steel.

The long life of Hi-Steel and the lower tonnage required make it an economical material—both in manufacturing and in operation—both for builder and customer.

It offers tremendous opportunities for product improvement. Ask for an Inland Metallurgist to help you achieve them and write for Bulletin No. 10.

SHEETS • STRIP • TIN PLATE • BARS • PLATES • STRUCTURALS • PILING • BILLETS • RAILS • TRACK ACCESSORIES

INLAND STEEL CO.

General Offices: 38 South Dearborn Street, Chicago, Illinois

Smooth-riding comfort at low cost for *High Speed Trains*

AIRCOWELDED Rail Ends help many roads to achieve the smooth riding comfort for which they have become so noted. The Royal Blue, "crack special" of the Baltimore & Ohio R. R., pictured above, is an excellent example of a smooth-riding high speed train.

Airco Railroad Customers have reduced their maintenance costs to a minimum through the combination of Airco apparatus, oxygen and acetylene, and Engineering Assistance.

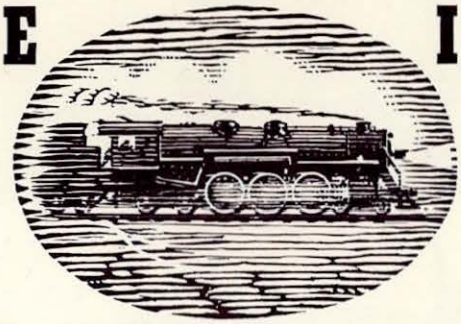
AIR REDUCTION
SALES COMPANY

General Offices: 60 East 42nd St., New York, N. Y.

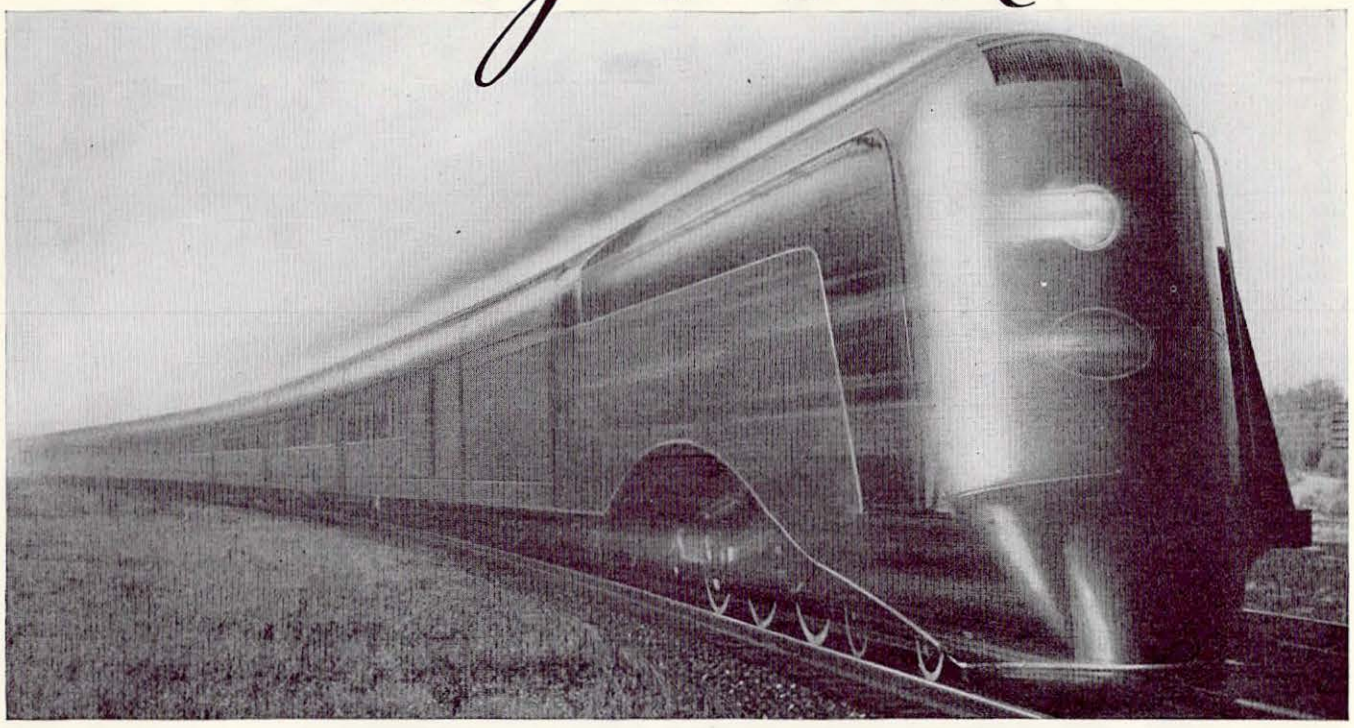
DISTRICT OFFICES and DISTRIBUTING POINTS in PRINCIPAL CITIES

A NATION-WIDE WELDING and CUTTING SUPPLY SERVICE

WHEN THE IRON HORSE



Steps out



it needs Mayari Engine-Bolt Steel

WHEN conventional motive power is groomed for runs that approach the sustained speeds of lightweight streamline equipment use Mayari Engine-Bolt Steel for fastenings. It will prevent the rack and stress of soaring speeds from running maintenance up unduly.

Mayari Engine-Bolt Steel combines the higher physicals required in bolts and studs by the new tempo of railroading with the reliability of materials heretofore in general use.

No heat-treatment is needed to prepare Mayari Engine-Bolt Steel for heavy duty. It can be used as received. No chance for error in treatment. No elaborate equipment required.

A GENERAL-PURPOSE STEEL

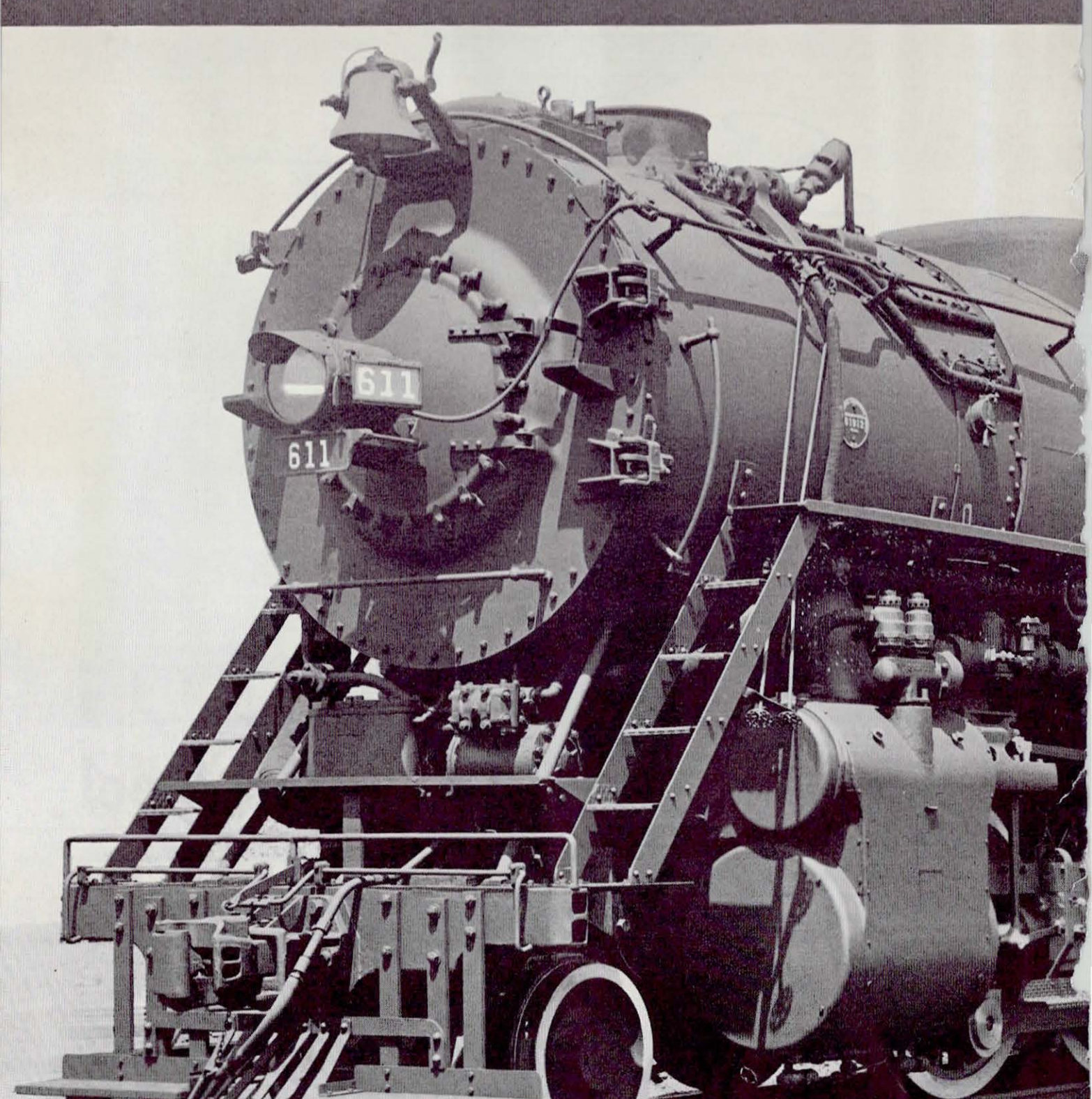
Mayari Engine-Bolt Steel is also unsurpassed for valve-motion pins and other case-hardened parts. It's an all-purpose steel, meeting practically every need for bolts, pins and miscellaneous locomotive parts.

BETHLEHEM STEEL COMPANY, *General Offices:* Bethlehem, Pa. *District Offices:* Albany, Atlanta, Baltimore, Boston, Bridgeport, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Hartford, Honolulu, Houston, Indianapolis, Kansas City, Los Angeles, Milwaukee, New York, Philadelphia, Pittsburgh, Portland, Ore., Salt Lake City, San Antonio, San Francisco, St. Louis, St.Paul, Seattle, Syracuse, Washington, Wilkes-Barre, York. *Export Distributor:* Bethlehem Steel Export Corporation, New York.

BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY

BESSEMER AND LAKE ERIE



THE BALDWIN LOCOMOTIVE

TEN 2-10-4 TYPE LOCOMOTIVES

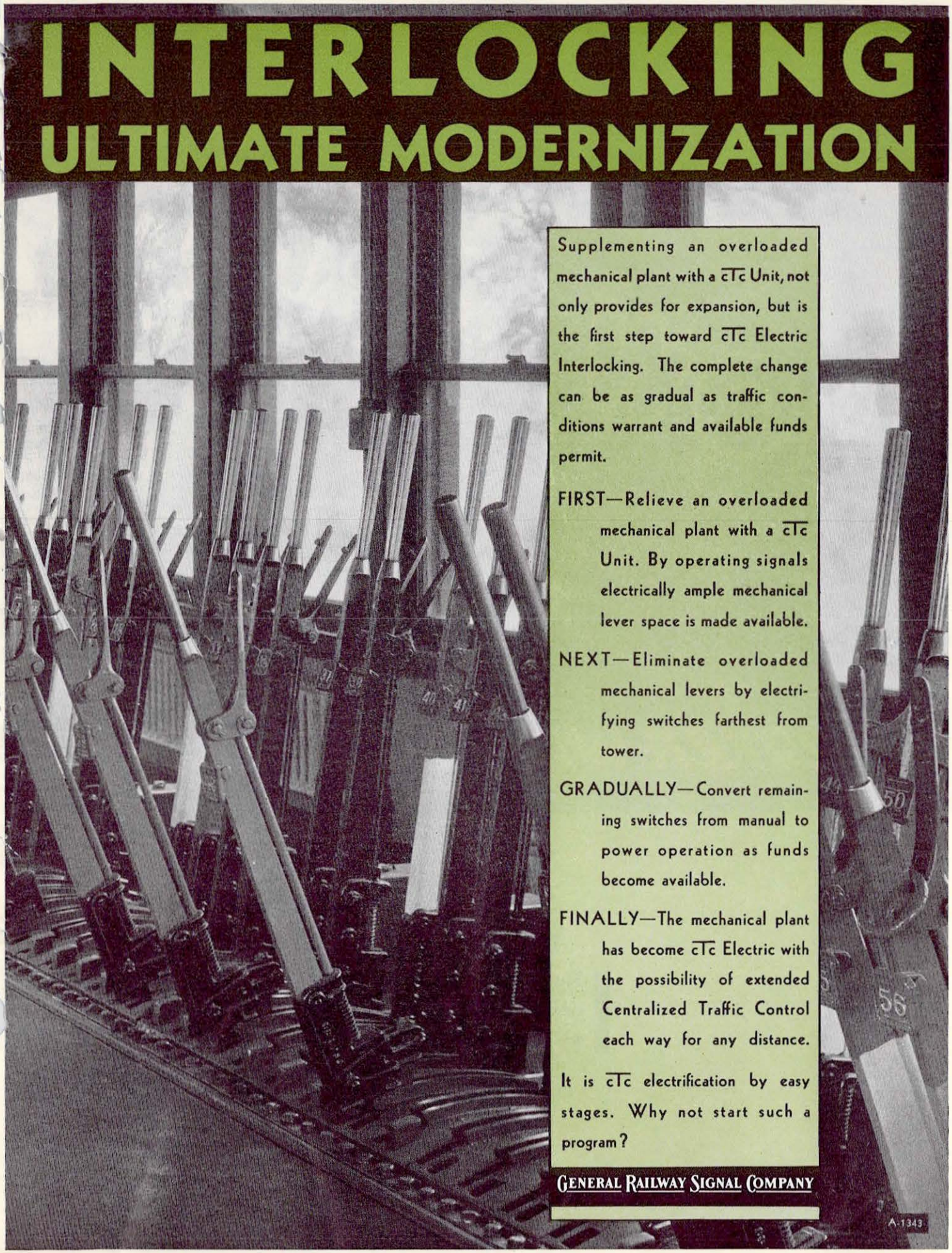
Delivery now being completed

WORKS • • • PHILADELPHIA

CTC MECHANICAL PROVIDES for EXPANSION and

Panel machines are furnished for suspending above mechanical interlocking or desk type machines for floor mounting anywhere in tower.

INTERLOCKING ULTIMATE MODERNIZATION



Supplementing an overloaded mechanical plant with a cTc Unit, not only provides for expansion, but is the first step toward cTc Electric Interlocking. The complete change can be as gradual as traffic conditions warrant and available funds permit.

FIRST—Relieve an overloaded mechanical plant with a cTc Unit. By operating signals electrically ample mechanical lever space is made available.

NEXT—Eliminate overloaded mechanical levers by electrifying switches farthest from tower.

GRADUALLY—Convert remaining switches from manual to power operation as funds become available.

FINALLY—The mechanical plant has become cTc Electric with the possibility of extended Centralized Traffic Control each way for any distance.

It is cTc electrification by easy stages. Why not start such a program?

GENERAL RAILWAY SIGNAL COMPANY

A-1343

Study this picture, and answer the questions on the opposite page.

Would you like to reduce the number of *slightly worn* freight car brake shoes that are now being removed because they are broken with part missing?

Would you like to reduce the number of freight car brake shoes to be purchased, stored, distributed, applied and removed?

Was the following A. A. R. statement based on information gathered from *your* road among others?

From Circular No. D.V. 846-A, Association of American Railroads

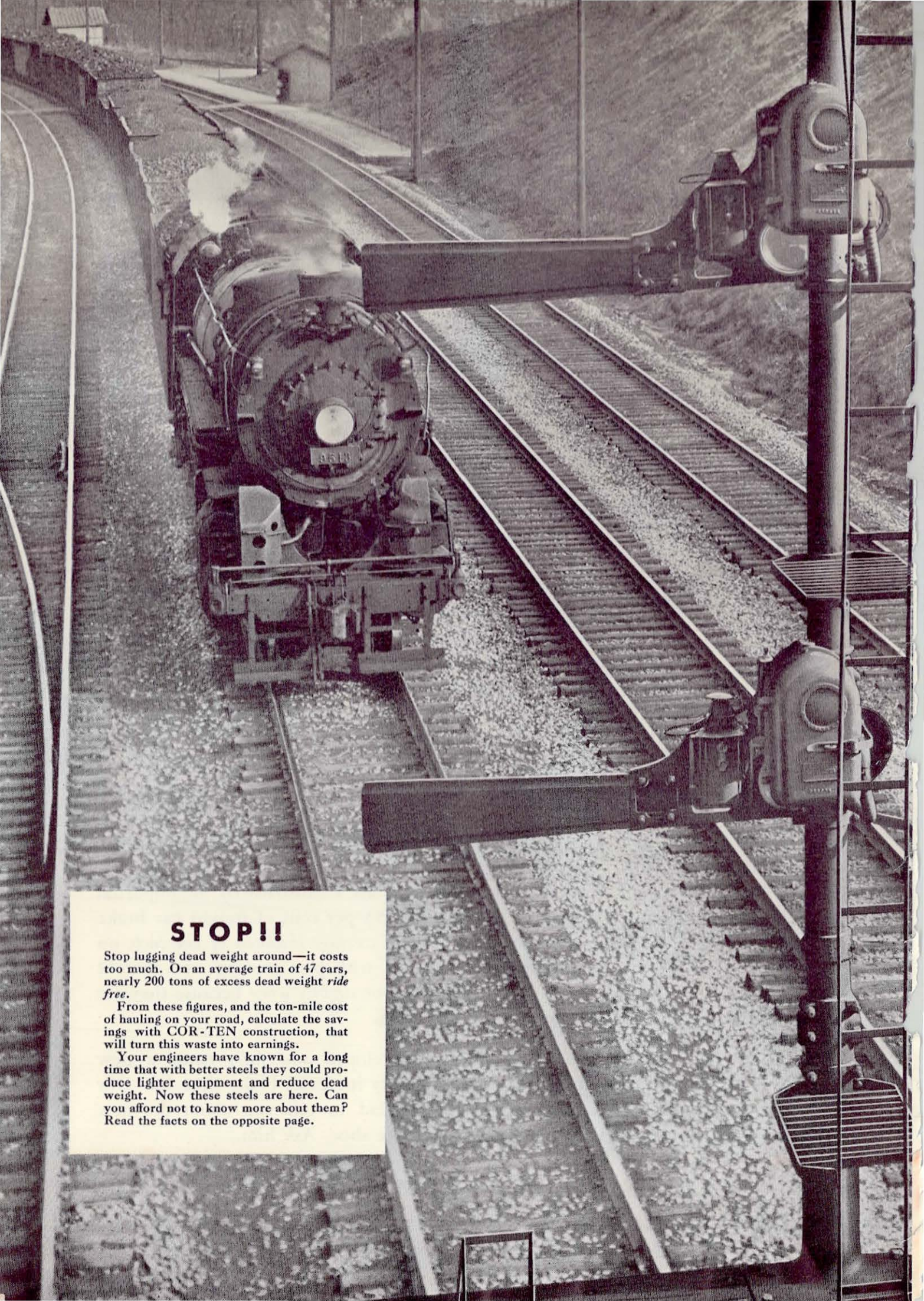
"Much information has been gathered in respect to service obtained from brake shoes on roads whose records could be accepted as reliable. These have been studied and reveal the fact that the present plain chilled cast iron type of shoe, as shown on pages 88 and 89, Section "E" of the 1934 Manual, only meets present day requirements with exceptionally heavy loss, waste and unduly high net cost to the purchaser. The fact that a very large per cent of brake shoes in freight service are never worn out but fail in large numbers before much shoe wear has developed is sufficient in itself to suggest that improvements in shoe design are not only desirable, but necessary."

DO YOU KNOW ABOUT THE LATEST IMPROVEMENT IN BRAKE SHOE REINFORCEMENT?

Data compiled from 9 Class 1 railroads by an impartial committee showed that 53 per cent of freight car brake shoes are removed *at an average thickness of one inch,* on account of being broken with part missing, and that 12 per cent are removed *when slightly worn* because they are broken with part missing.

This Company has developed *and fully tested* a new reinforcement that greatly increases brake shoe life. Our representative will be glad to tell you about the new Duplane reinforced brake shoe. Ask him.

THE AMERICAN BRAKE SHOE AND FOUNDRY COMPANY

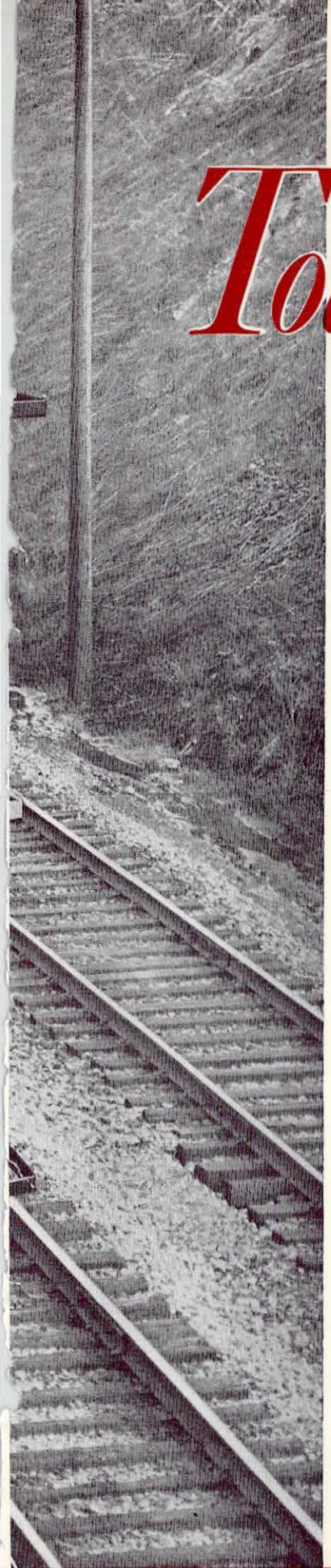


STOP!!

Stop lugging dead weight around—it costs too much. On an average train of 47 cars, nearly 200 tons of excess dead weight *ride free*.

From these figures, and the ton-mile cost of hauling on your road, calculate the savings with COR-TEN construction, that will turn this waste into earnings.

Your engineers have known for a long time that with better steels they could produce lighter equipment and reduce dead weight. Now these steels are here. Can you afford not to know more about them? Read the facts on the opposite page.



Today... the board is set against *Dead Weight*

RAILROAD executives realize that dead weight must go—must be converted into revenue paying capacity, if the railroads are to prosper—that if the weight of every freight car in the country was reduced only one-tenth, the railroads would save many millions of dollars every year.

Such reduction in dead weight is feasible and practical today. Designed for USS COR-TEN, freight cars are being constructed 20% lighter—and every ton of dead weight removed adds an equal tonnage to pay load capacity.

This weight reduction involves no sacrifice in strength, stamina, or length of service. USS COR-TEN has a yield point nearly twice that of mild steel—and a tensile strength one and a half times greater. Its *resistance to atmospheric corrosion is from 4 to 6 times that of ordinary steel.* It will endure!

Modernized passenger equipment, built of USS COR-TEN, USS 18-8 Stainless, and other USS High Tensile Steels is 40%, 50% and in some cases 60% lighter than conventional construction.

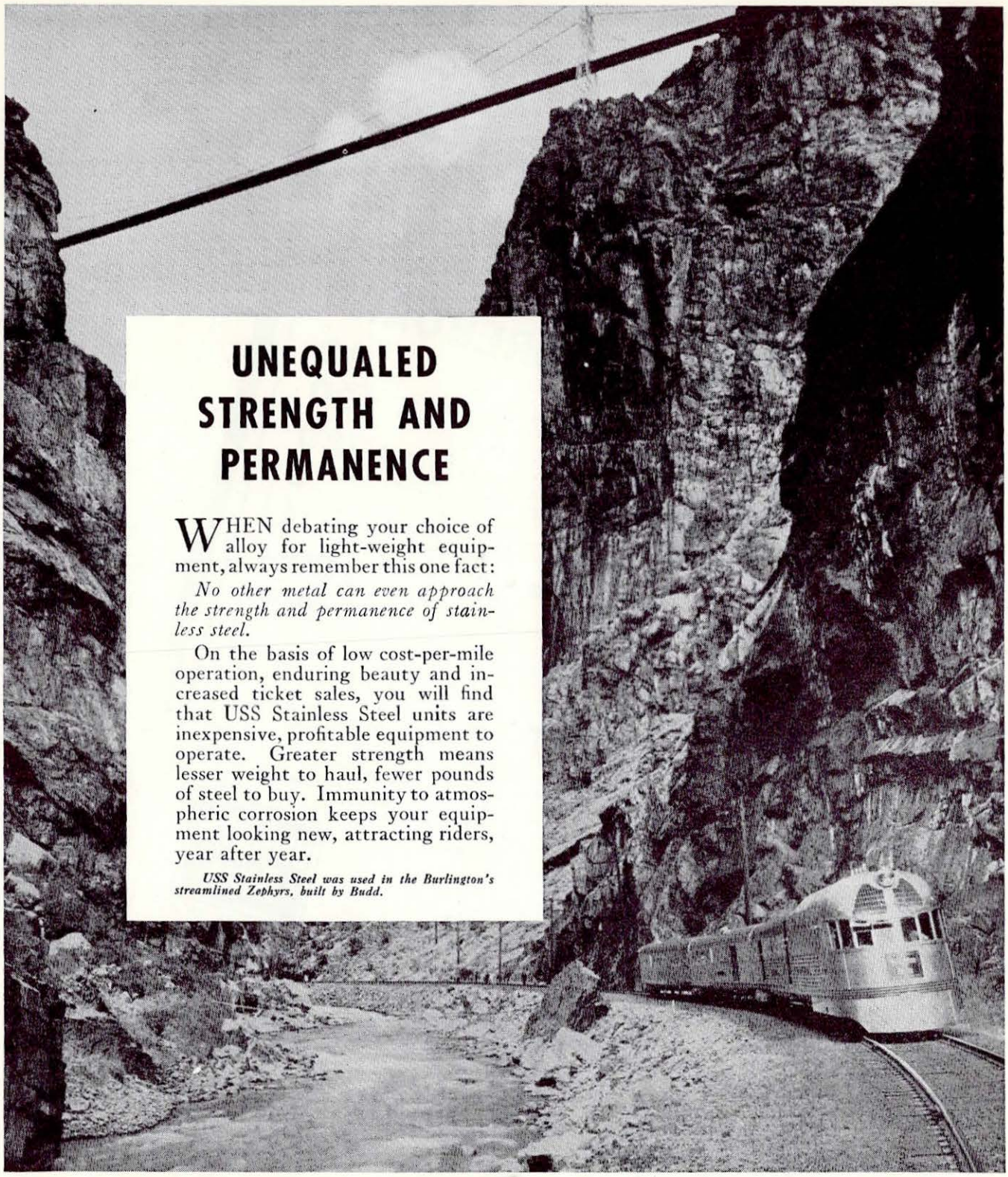
If you would like the full story of the economies USS High Tensile Steels have made possible in recent railroad applications and how little they increase costs or affect shop practice, address Railroad Research Bureau, United States Steel Corporation Subsidiaries, Frick Annex, Pittsburgh, Pa.

AMERICAN STEEL & WIRE COMPANY, *Chicago and New York* . . . CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh and Chicago* . . . COLUMBIA STEEL COMPANY, *San Francisco* . . . NATIONAL TUBE COMPANY, *Pittsburgh* . . . TENNESSEE COAL, IRON & RAILROAD COMPANY, *Birmingham* . . . COLUMBIA STEEL COMPANY, SAN FRANCISCO, *Pacific Coast Distributors* . . . UNITED STATES STEEL PRODUCTS COMPANY, NEW YORK, *Export Distributors*

UNITED STATES STEEL

MORE NEW BANTAM ROLLER BEARING INSTALLATIONS LISTED DURING 1935 THAN ALL OTHERS COMBINED

(SEPTEMBER 1935 REPORT IRON AND STEEL ENGINEER)



UNEQUALED STRENGTH AND PERMANENCE

WHEN debating your choice of alloy for light-weight equipment, always remember this one fact:

No other metal can even approach the strength and permanence of stainless steel.

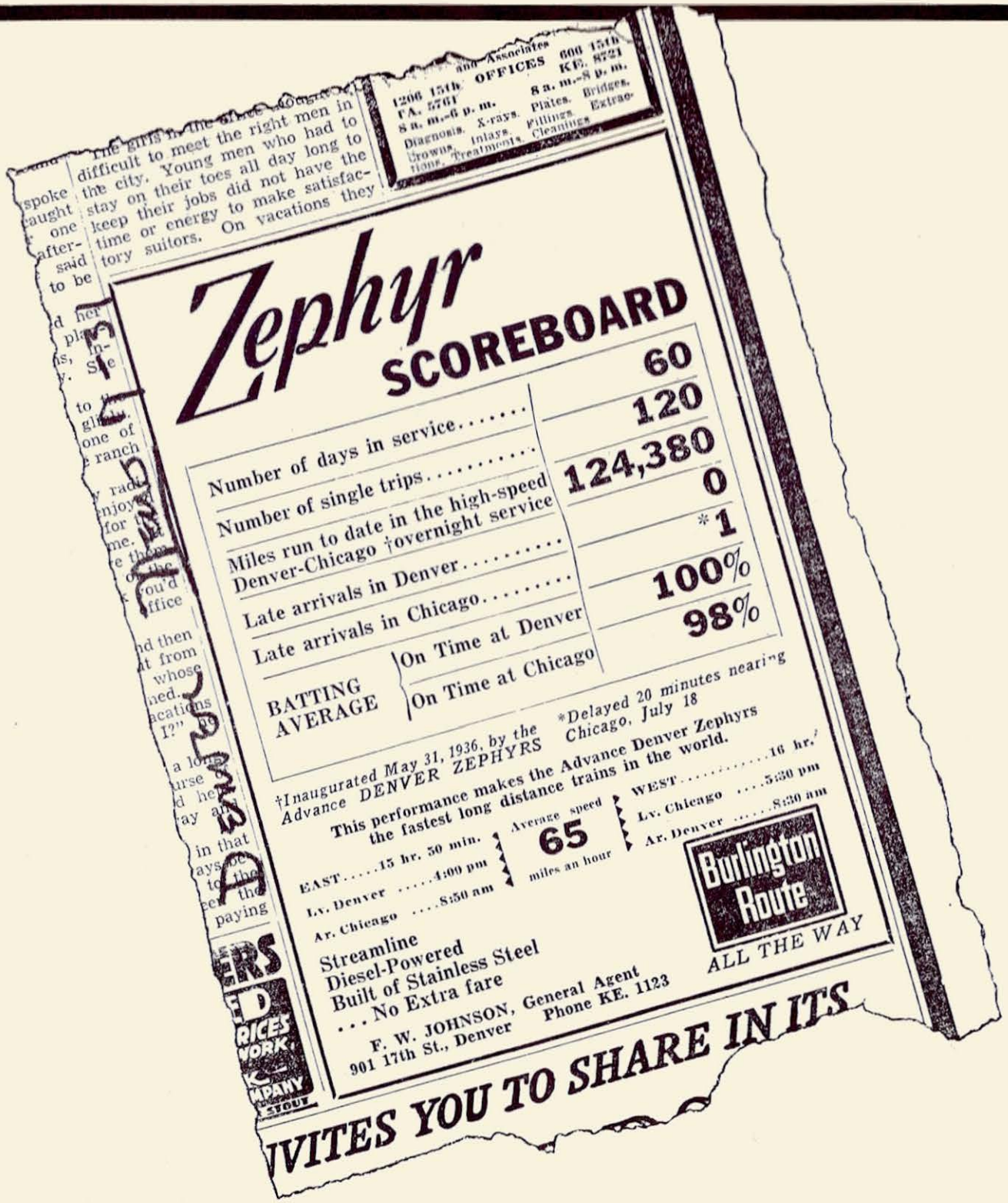
On the basis of low cost-per-mile operation, enduring beauty and increased ticket sales, you will find that USS Stainless Steel units are inexpensive, profitable equipment to operate. Greater strength means lesser weight to haul, fewer pounds of steel to buy. Immunity to atmospheric corrosion keeps your equipment looking new, attracting riders, year after year.

***USS Stainless Steel** was used in the Burlington's streamlined Zephyrs, built by Budd.*

USS STAINLESS STEEL

CARNEGIE-ILLINOIS STEEL CORPORATION, *Pittsburgh and Chicago*
With which has been consolidated American Sheet and Tin Plate Company
AMERICAN STEEL & WIRE COMPANY, *Chicago and New York*
NATIONAL TUBE COMPANY, *Pittsburgh*
Columbia Steel Company, San Francisco, *Pacific Coast Distributors* · United States Steel Products Company, New York, *Export Distributors*

UNITED STATES STEEL


Zephyr
SCOREBOARD
Number of days in service..... 60
Number of single trips..... 120
Miles run to date in the high-speed Denver-Chicago †overnight service 124,380
Late arrivals in Denver..... 0
Late arrivals in Chicago..... *1
BATTING AVERAGE
On Time at Denver 100%
On Time at Chicago 98%
†Inaugurated May 31, 1936, by the Advance DENVER ZEPHYRS
*Delayed 20 minutes nearing Chicago, July 18
This performance makes the Advance Denver Zephyrs the fastest long distance trains in the world.
EAST.....15 hr. 50 min.
Lv. Denver .....4:00 pm
Ar. Chicago ....8:50 am
Average speed 65 miles an hour
WEST.....16 hr.
Lv. Chicago ....5:30 pm
Ar. Denver .....8:30 am
Streamline
Diesel-Powered
Built of Stainless Steel
... No Extra fare
F. W. JOHNSON, General Agent
901 17th St., Denver Phone KE. 1123
Burlington Route
ALL THE WAY
VITES YOU TO SHARE IN ITS

• Since the inauguration of the Advance Zephyr service between Chicago and Denver, the Burlington Railroad has been publishing regular accounts of the amazing performances of Budd-built trains. • The above record, taken from the Denver News of July 31st, requires no further comment.

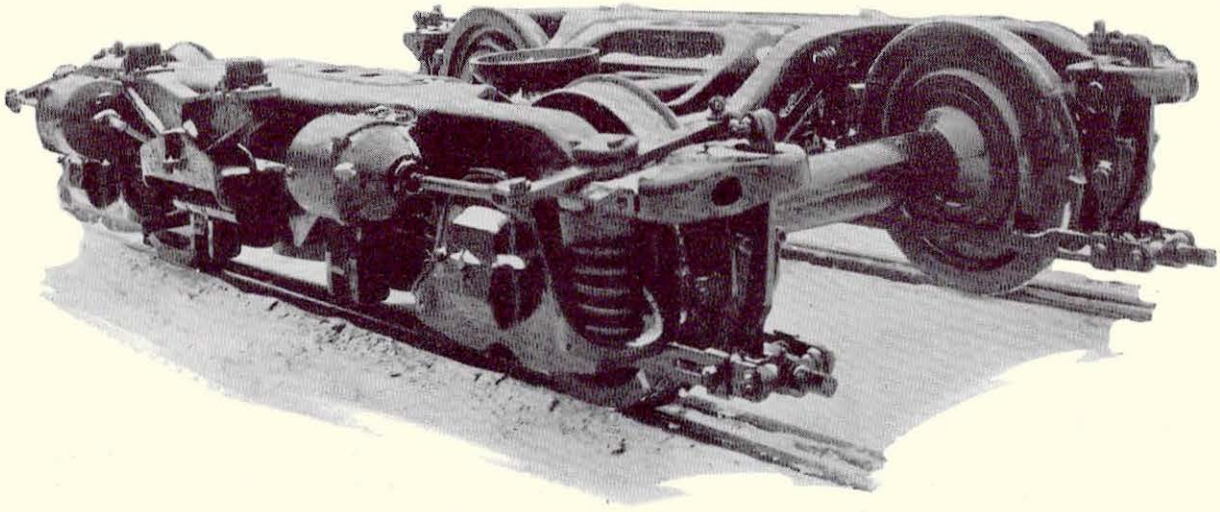
EDW. G. BUDD MANUFACTURING COMPANY

RAILWAY DIVISION • PHILADELPHIA

BUDD METHODS SAFELY ELIMINATE DEAD-WEIGHT

NEW ILLINOIS CENTRAL "GREEN DIAMOND"

THE LATEST DEVELOPMENT IN LIGHT WEIGHT HIGH SPEED PASSENGER EQUIPMENT



American Steel Foundries Roller Bearing Units are used on the trailer trucks of this modern train and Simplex Unit Cylinder Clasp Brakes on all trucks.

All castings used in the Clasp Brake assembly are of American Steel Foundries Hylastic Steel.

The American Steel Foundries' latest contribution to the present efficiency, safety, comfort and luxury of railway equipment.

AMERICAN STEEL FOUNDRIES

NEW YORK CHICAGO ST. LOUIS

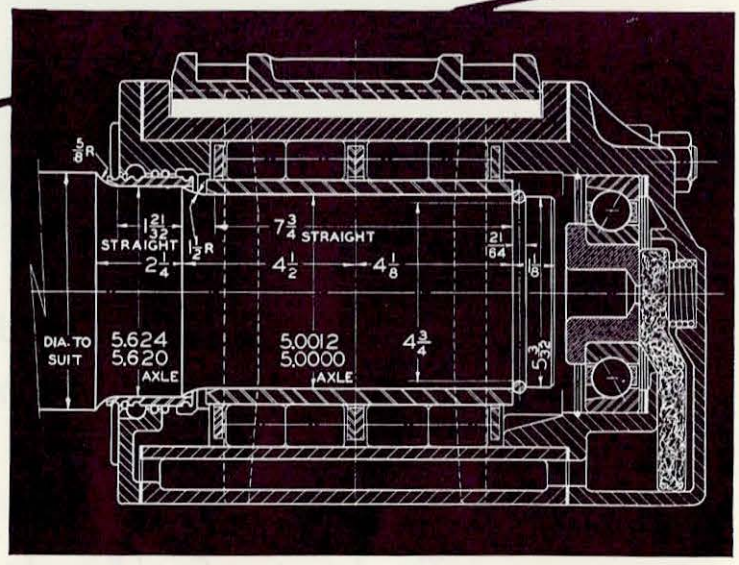
TO THIS REPORT of the Mechanical Division, A.A.R.,

"The question of increased speeds also has an important impress on the problem of axle design for roller bearings. Experience gained the last two or three years with axles in high-speed streamline train service as well as high-speed electric service has demonstrated that actual stresses increase in a fast ascending ratio for speeds above 70 m.p.h. and that the conventional formula for axle fibre stress cannot be fairly used at these higher speeds. . . . Some roller bearing manufacturers have conducted exhaustive studies into the causes surrounding the fatiguing of axles, with the result that a redesigned axle has been recommended, consisting of an overall increase in diameter and the placing of pressed-fit members, such as the wheels and bearing races, on large diameter of the axle.

"Some of the redesigned axles have been applied, but have not had sufficient service to arrive at definite conclusions. However, the subcommittee hopes to have additional information for the next report."

(*Signed by* A. H. FETTERS, R. G. BENNETT *and* W. F. CONNAL).

FAFNIR Has This Answer



Fafnir Roller Bearings can be applied *without* reduction of journal diameter. Standard interior and exterior dimensions can be maintained with no sacrifice of bearing capacity. Fafnir leads the way in providing increased axle capacity for high-speed service.

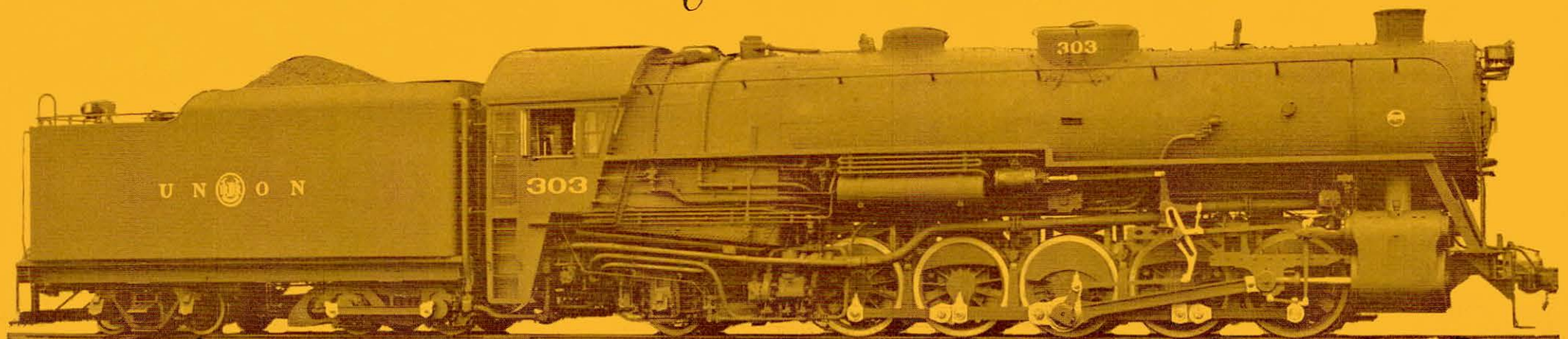
Other Fafnir features include a completely anti-friction unit, with a roller bearing for radial load and a ball bearing for thrust load; free lateral movement—no service adjustments required; and provision for wheel changing without bearing disassembly. The ample capacity and positive lubrication at all speeds assures long, efficient life. The Fafnir Bearing Co., *New Britain, Connecticut.*

Safeguarding Quality

FAFNIR *Roller Journal* BEARINGS

SYPHON EQUIPPED

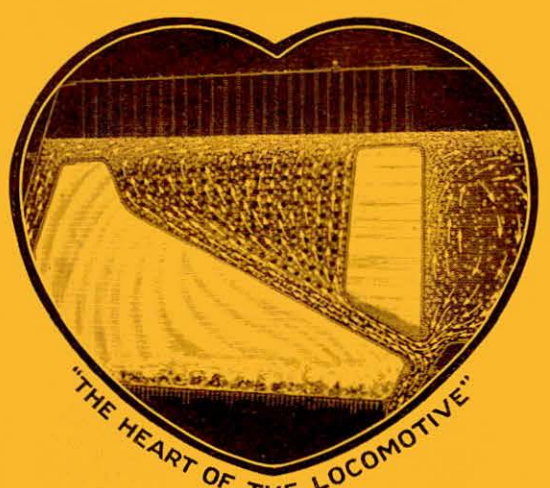
Of Course



• The new 0-10-2 Union Type Transfer and Switching Locomotives, the first of this wheel arrangement ever built, are each equipped with three Nicholson Thermic Syphons.

"Baldwin Locomotives" issue of July, 1936, states: "—it is believed that these engines reach a new high level for capacity and potential earning power in heavy switching and transfer service, such as that in which the Union Railroad is engaged."

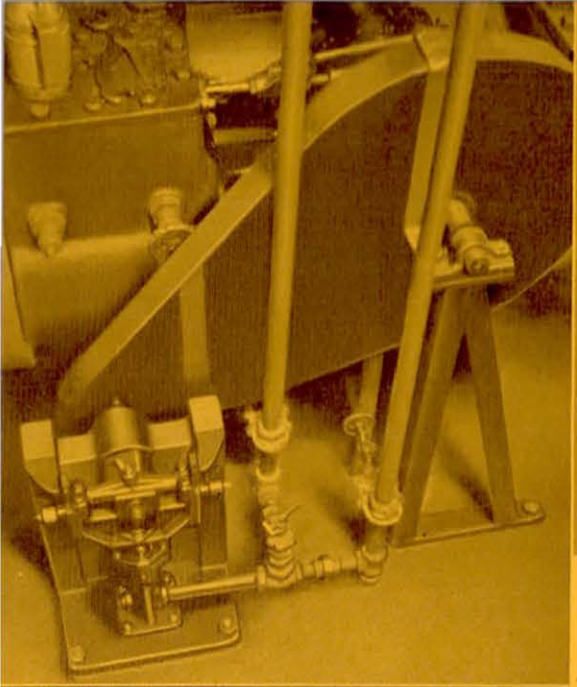
The Syphons add 124 sq. ft. of heating surface in the zone of most intense direct and radiant heat.

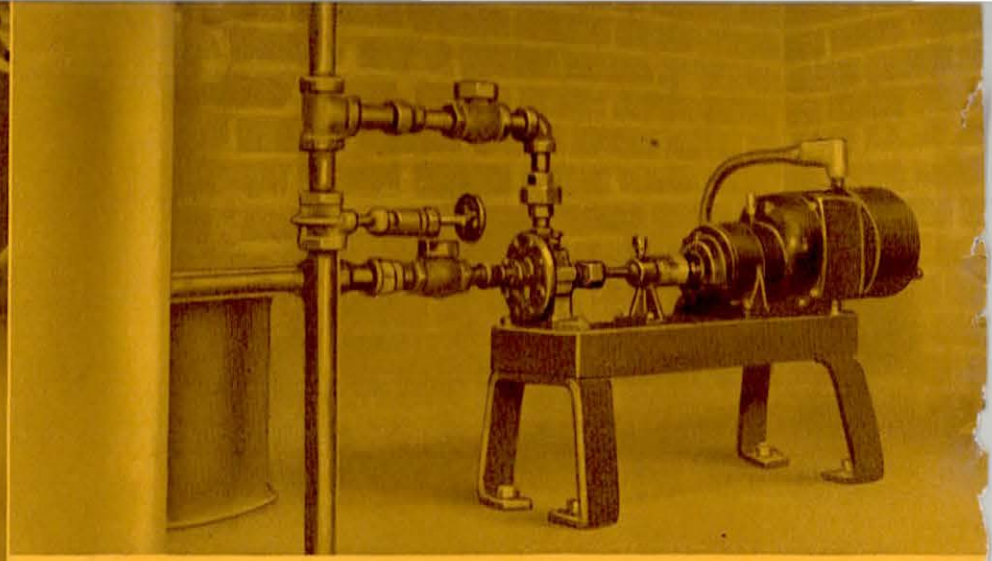


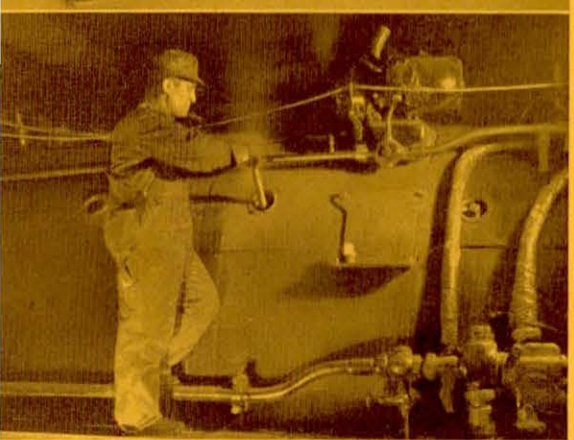
Circulation • *Economy* • *Safety*

LOCOMOTIVE FIREBOX COMPANY

NEW YORK CHICAGO MONTREAL







PREVENTING
Scale Formation

DEARBORN Treating Materials prevent scale formation on flues and sheets in locomotive boilers and in feed water heaters, injectors, branch pipes, boiler checks and feed pumps.

The present tendency is to carry as high a mineral concentration as possible in boiler water. The economical treating materials recommended by the Dearborn Chemical Company stabilize the boiler water in addition to preventing the precipitating minerals from forming scale.

Dearborn Laboratories analyze the water supplies and determine the proper combination of treating materials. Dearborn Chemical and Mechanical Engineers survey your water problem. They outline the best methods of application of Dearborn Treatment, and where advisable, recommend and furnish the type of mechanical proportioning equipment most suitable for the case. Dearborn Service Engineers offer you reliable and responsible cooperation. Surveys, recommendations and service are without charge.

DEARBORN CHEMICAL COMPANY

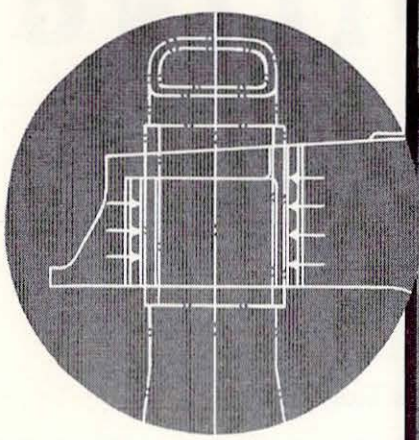
310 S. Michigan Avenue, Chicago 205 East 42nd St., New York

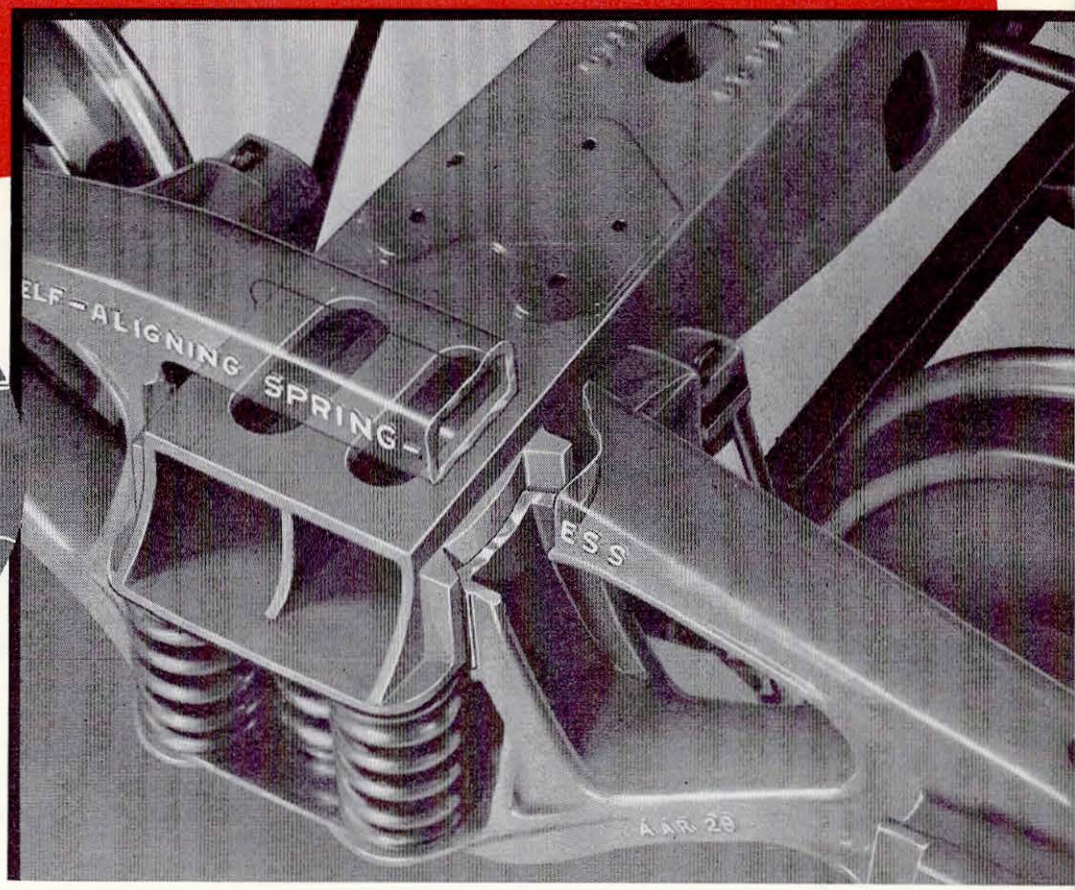
2454 Dundas St. W., Toronto

Dearborn

TRADE MARK REGISTERED

A safe bolster-side frame assembly





In all types of service, the wide bearing areas of bolster and side frame of the Self-Aligning (spring-plankless) Truck are constantly maintained fully in contact, insuring a safe, unchanging bolster-side frame assembly.

Springs are on one open level . . . bolsters, side frames and springs can be readily inspected without disassembly.

Wheel renewals are quickly effected by removing the easily accessible springs, thus permitting the bolster to be lowered to clear columns.

The safety of the Self-Aligning Truck is an important consideration when ordering new equipment or repairs.

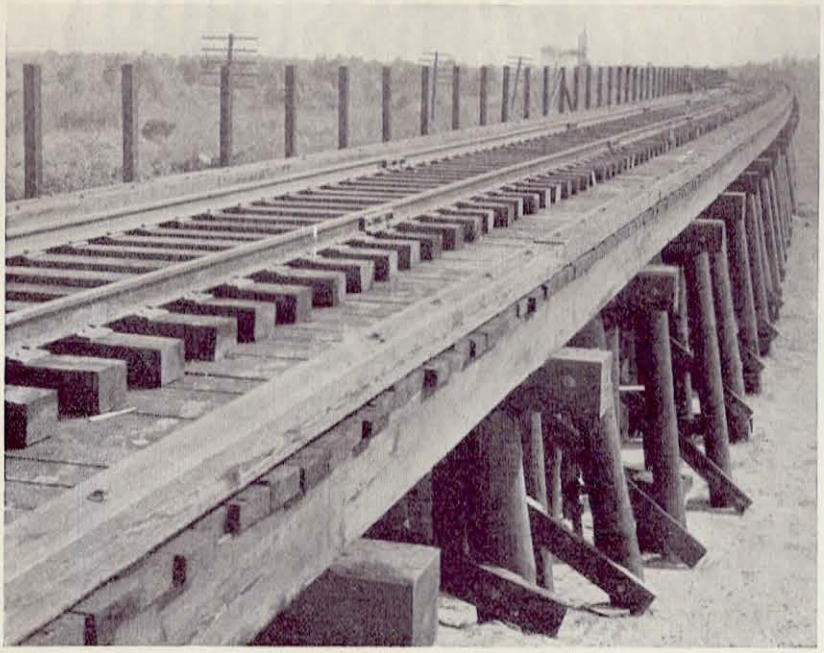
THE OHIO STEEL FOUNDRY CO.
LIMA, OHIO
Licensed Manufacturer of Self-Aligning Trucks

Self-Aligning Trucks reduce operating and maintenance costs . . . less dead weight . . . fewest parts . . . quick wheel changes . . . *and proved safety.*

SELF-ALIGNING TRUCKS *spring-plankless double-truss*

UTILIZE DESIGNS OF PROVED DEPENDABILITY

FOR PERMANENT ECONOMICAL CONSTRUCTION



use

PRESSURE TREATED

TIMBERS *and* PILING

THE WOOD PRESERVING CORPORATION KOPPERS

Wood Preservation has contributed greatly to the efficient operation of the Railways, by the use of Pressure Treated Cross Ties, Switch Ties, Bridge Timbers and Piling.

Because of delayed Maintenance and Repairs, due to the depression years and reduced budgets, and with increasing freight and passenger traffic, the use of "WOOD PRESERVING" Pressure Treated Timber Products for new construction and repairs will meet the present demands for greater speed, safety and comfort.

The uniform high quality of our pressure treated timber products gives lifetime satisfaction and maximum service life, with low maintenance costs. Over 40 years of continuous Experience, Progress, Co-operation and Research is your assurance of Service and Value.

THE WOOD PRESERVING CORPORATION

KOPPERS BUILDING . . . PITTSBURGH, PENNA.

SALES OFFICES

Baltimore, Md.
Boston, Mass.
Charleston, S. C.
Chicago, Ill.
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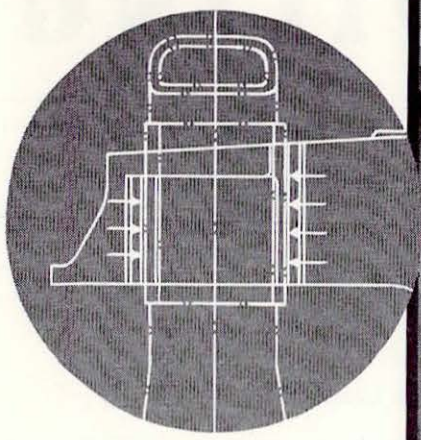
Houston, Texas
Kansas City, Mo.
Memphis, Tenn.

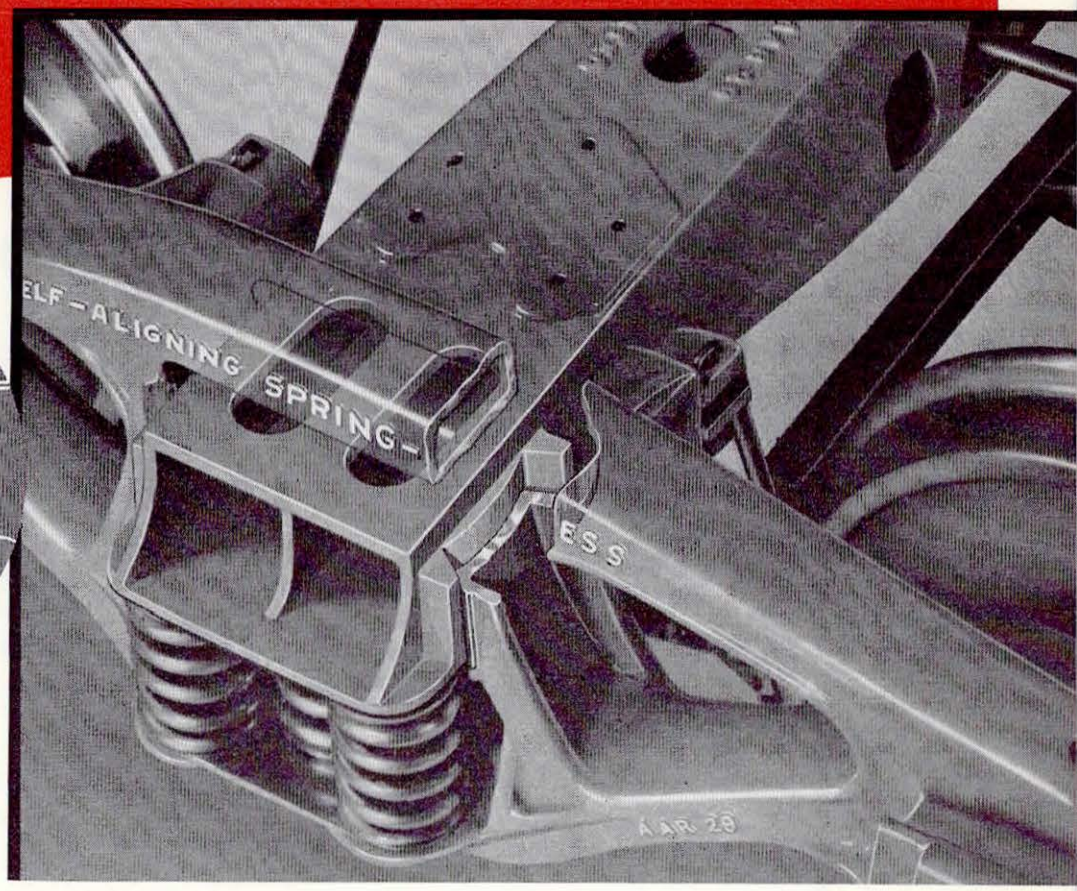
AYER & LORD DIVISION CHICAGO, ILL.
CENTURY DIVISION PITTSBURGH, PA.
CAROLINA WOOD PRESERVING CO. CHARLESTON, S. C.
NATIONAL LUMBER & CREOSOTING CO. TEXARKANA, ARK-TEX.

SALES OFFICES

Montgomery, Ala.
New York, N. Y.
Philadelphia, Pa.
Pittsburgh, Pa.
Reed City, Mich.
St. Louis, Mo.
Superior, Wis.
Texarkana, Ark.

A safe bolster-side frame assembly





In all types of service, the wide bearing areas of bolster and side frame of the Self-Aligning (spring-plankless) Truck are constantly maintained fully in contact, insuring a safe, unchanging bolster-side frame assembly.

Springs are on one open level . . . bolsters, side frames and springs can be readily inspected without disassembly.

Wheel renewals are quickly effected by removing the easily accessible springs, thus permitting the bolster to be lowered to clear columns.

The safety of the Self-Aligning Truck is an important consideration when ordering new equipment or repairs.

THE OHIO STEEL FOUNDRY CO.
LIMA, OHIO
Licensed Manufacturer of Self-Aligning Trucks

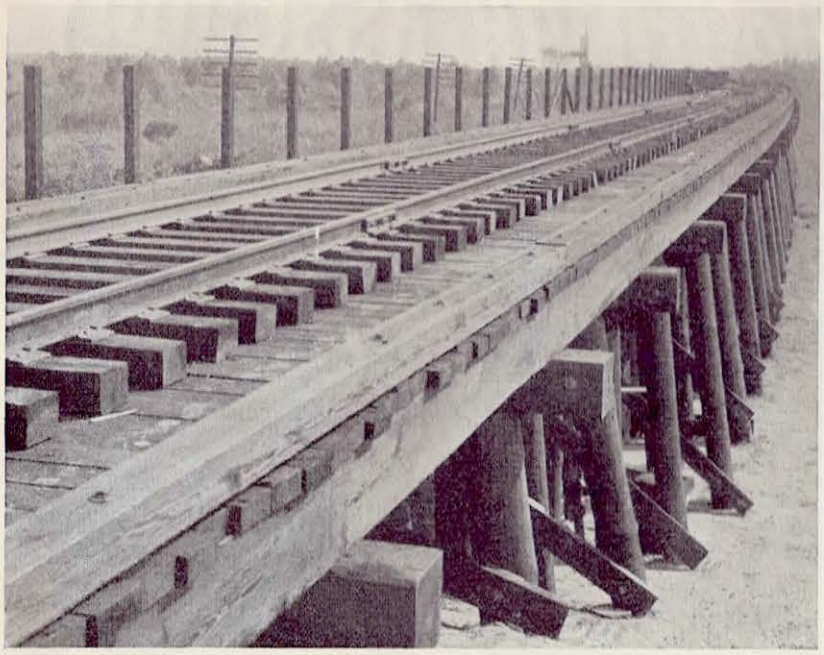
Self-Aligning Trucks reduce operating and maintenance costs . . . less dead weight . . . fewest parts . . . quick wheel changes . . . *and proved safety.*

SELF-ALIGNING TRUCKS

spring-plankless double-truss

UTILIZE DESIGNS OF PROVED DEPENDABILITY

FOR PERMANENT ECONOMICAL CONSTRUCTION



use

PRESSURE TREATED

TIMBERS *and* PILING

Wood Preservation has contributed greatly to the efficient operation of the Railways, by the use of Pressure Treated Cross Ties, Switch Ties, Bridge Timbers and Piling.

Because of delayed Maintenance and Repairs, due to the depression years and reduced budgets, and with increasing freight and passenger traffic, the use of "WOOD PRESERVING" Pressure Treated Timber Products for new construction and repairs will meet the present demands for greater speed, safety and comfort.

The uniform high quality of our pressure treated timber products gives lifetime satisfaction and maximum service life, with low maintenance costs. Over 40 years of continuous Experience, Progress, Co-operation and Research is your assurance of Service and Value.

THE WOOD PRESERVING CORPORATION

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Passengers Expect CONSTANT Air Conditioning Comfort

PASSENGERS expect air conditioning to be as constant and unfailing as other railway operations. The Pullman Air Conditioning System has been designed with a ruggedness necessary to stand the wear and tear of railroad operation, in order that the comfort of passengers may not be interrupted.

Reliability, therefore, is the first requirement in air conditioning.

Performance of the Pullman Direct Drive Air Conditioning System was 99 4/10% perfect during the 1934 cooling season . . . 99 6/10% during the 1935 season . . . and preliminary figures for 1936 indicate an equal record. These figures deserve careful consideration when air conditioning additional equipment.

Now, before the end of the 1936 cooling season is an opportune time to investigate the reliability and economy of the Pullman Air Conditioning System.

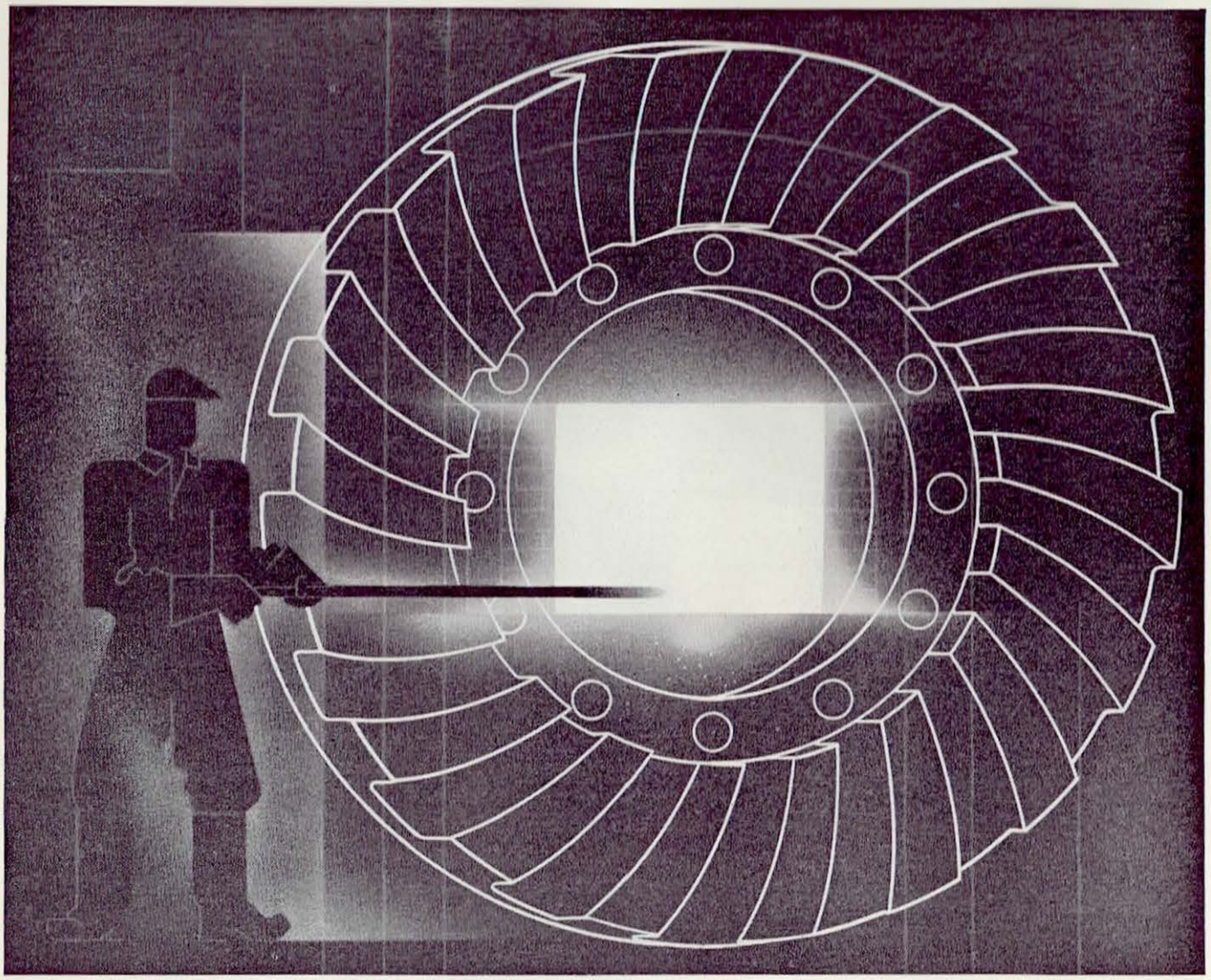
PULLMAN-STANDARD CAR MANUFACTURING COMPANY

CHICAGO • PITTSBURGH • WASHINGTON, D. C. • NEW ORLEANS • CLEVELAND
HOUSTON • BALTIMORE • BIRMINGHAM • NEW YORK • WORCESTER, MASS.

San Francisco . . Sales Representative . . . Latham McMullin, Russ Building

The general design of the Pullman Air Conditioning System comes under the claims of the Carry patent No. 2,000,477; patents No. 1,948,47 and 1,984,912, and other patent allowed and pending.

PULLMAN AIR CONDITIONING SYSTEM



MOLY carburizing steels reduce distortion

DISTORTION is one of the greatest troubles encountered in carburizing steels. Moly—"industry's most versatile alloying element"—reduces distortion after heat-treatment to a predictable minimum. Case example: In a Nickel-Moly sleeve of 4-ft. diameter and comparatively thin section, the maximum distortion was less than .015 in.

Moly carburizing steels also take a greater and more uniform depth of case in a shorter time. The case retains its hardness at higher operating temperatures. And both case and core are tougher and have a better bond. Are you fully acquainted with the many-sided qualities of Moly, particularly toward the better and more uniform heat-treating of steels? Our book, "Molybdenum," contains a wealth of useful technical knowledge. Write for it. Also ask us to put you on the mailing list of "The Moly Matrix," our periodical news-sheet designed to help alert engineers and production heads to keep abreast of iron and steel progress. And, if interested in solving some difficult ferrous problem of your own, be free to enlist the facilities of our experimental laboratory.

CLIMAX MOLYBDENUM COMPANY, 500 FIFTH AVENUE, NEW YORK CITY

PRODUCERS OF FERRO-MOLYBDENUM, CALCIUM MOLYBDATE AND MOLYBDENUM TRIOXIDE

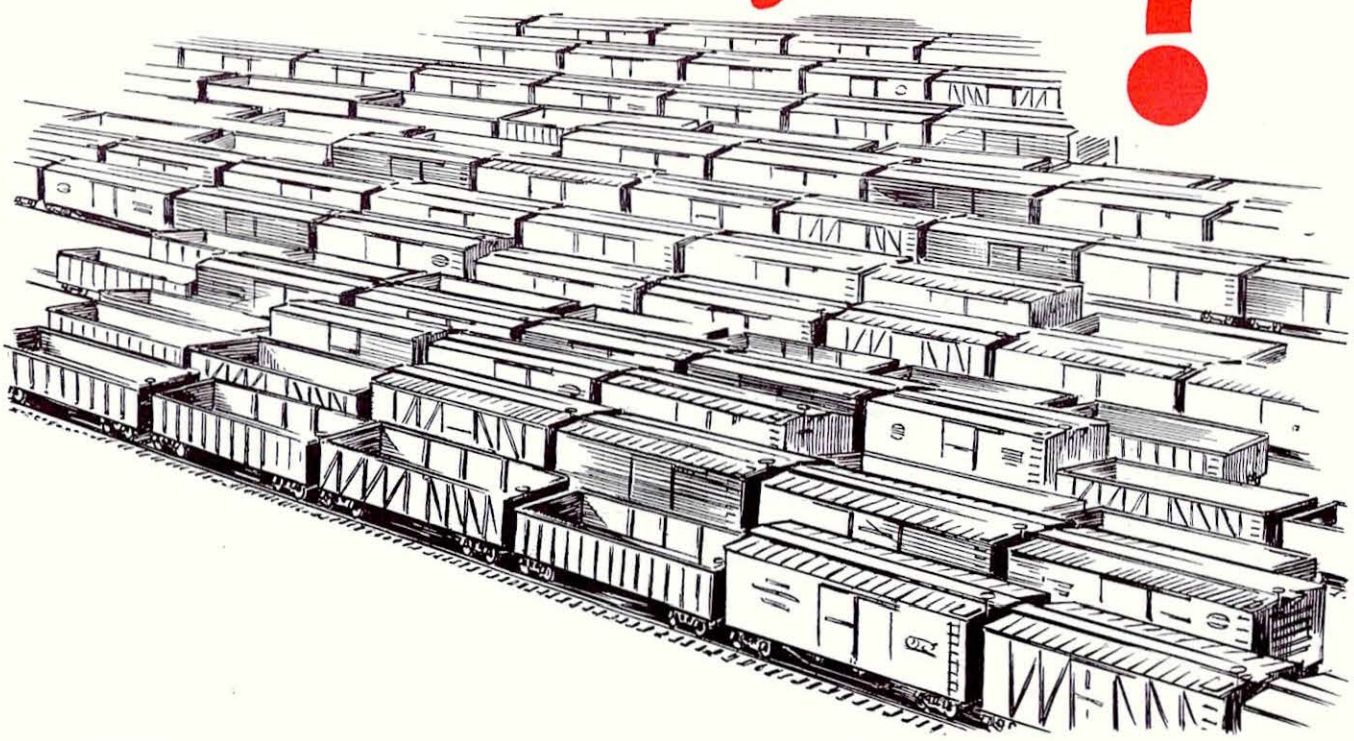
MOLY

CLIMAX Mo-lyb-den-um

CUTS COSTS

CREATES SALES

Is Car Ownership Adequate?



"THE relationship between serviceable cars and carloadings in 1929, a year of high operating efficiency indicates a ratio of serviceable cars to weekly carloadings of 2.37 to 1.

"Serviceable cars on Class 1 Railroads numbered 2,158,000 on December 31, 1929; on December 31, 1935, they had decreased to 1,566,000 — a reduction of 592,000 cars *** private line serviceable cars amounted to 278,000, making a total of 1,844,000 serviceable cars.

"Average weekly carloadings in 1935 were 606,000 with a maximum of 734,000 in October. During the first six weeks of 1936 carloadings have averaged seven per cent higher than in the corresponding period last year.

"This ratio of serviceable cars to average weekly carloadings has been applied to certain assumed carloadings in order to determine the number of serviceable cars necessary to handle the traffic at various levels. These figures are shown in the following table:

Average Weekly Carloadings	Serviceable Cars Necessary Based on 1929 Efficiency
600,000	1,422,000
650,000	1,541,000
700,000	1,659,000
750,000	1,778,000
800,000	1,896,000
850,000	2,015,000
900,000	2,133,000"

The above are excerpts from report dated March 10, 1936, by Coverdale & Colpitts on the "Economic Aspects of the Freight Car Situation."

Carloadings for the first seven months of 1936 show an increase of 11.56% over the same period in 1935.

Carloadings for the last two weeks July 25th and August 1st were 731,065 and 747,551 respectively.

American Railway Car Institute

19 Rector Street New York, N. Y.

THE NORFOLK & WESTERN Puts 7 New Locomotives on TIMKEN BEARINGS

Tapered Roller
TIMKEN BEARING
EQUIPPED

A symbol of quality for any piece of equipment with which it is associated

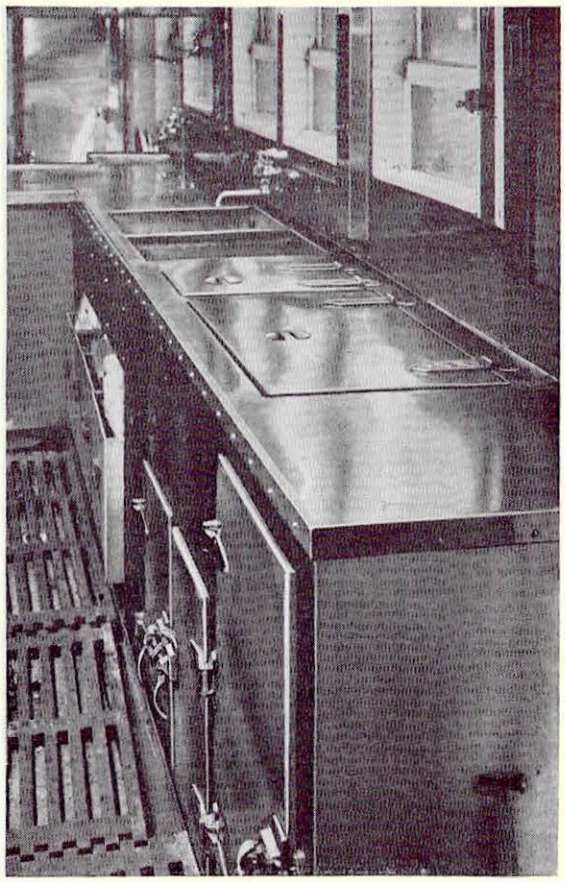
Pictured above is one of two powerful Class 2-6-6-4 articulated freight locomotives recently placed in service on the Norfolk & Western R. R. These new locomotives are completely equipped with Timken Bearings on all axles, including driving axles. They were built in the Norfolk & Western shops, Roanoke, Virginia.

Five new Class 2-8-8-2 articulated locomotives now under construction in the Norfolk & Western shops are also being equipped with Timken Bearings on all axles, including driving axles. The use of Timken Bearings on locomotive axles improves performance, increases dependability and reduces maintenance. It also greatly extends availability — an advantage that is assuming greater and greater importance.

95% OF ALL STEAM LOCOMOTIVE ROLLER BEARING DRIVING AXLES ARE TIMKEN-EQUIPPED.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN *TAPERED ROLLER* **BEARINGS**



OXWELD PIONEERS *in Stainless Steel Welding*

Ice boxes and other kitchen equipment for reconditioned dining cars were fabricated of stainless steel by oxy-acetylene welding.

Oxweld procedures for the welding of stainless steel enable railroads to fabricate a variety of new equipment of this desirable metal. The introduction of the new Oxweld No. 28 Columbium-Bearing 18-8 Chrome-Nickel Steel Welding Rod is Oxweld's latest contribution to the progress of stainless steel welding. The columbium in this welding rod assures corrosion-resistant welds retaining all the advantages of the original stainless steel. Where a columbium- or titanium-bearing stainless steel base metal is used, the usual heat treatment is unnecessary.

Oxweld No. 28 Welding Rod, used in accordance with Oxweld stainless steel welding procedure, produces better welds because columbium assures high cleanliness, does not excessively burn out during welding, and counteracts effects of carbon pick-up in the weld metal.

Stainless steel welding is one of the many welding or cutting applications The Oxweld Railroad Service Company is able to introduce to its clients. The majority of Class I railroads have been Oxweld Railroad Service contract customers for many years.

OXWELD RAILROAD SERVICE

THE OXWELD RAILROAD SERVICE COMPANY
Unit of Union Carbide and Carbon Corporation

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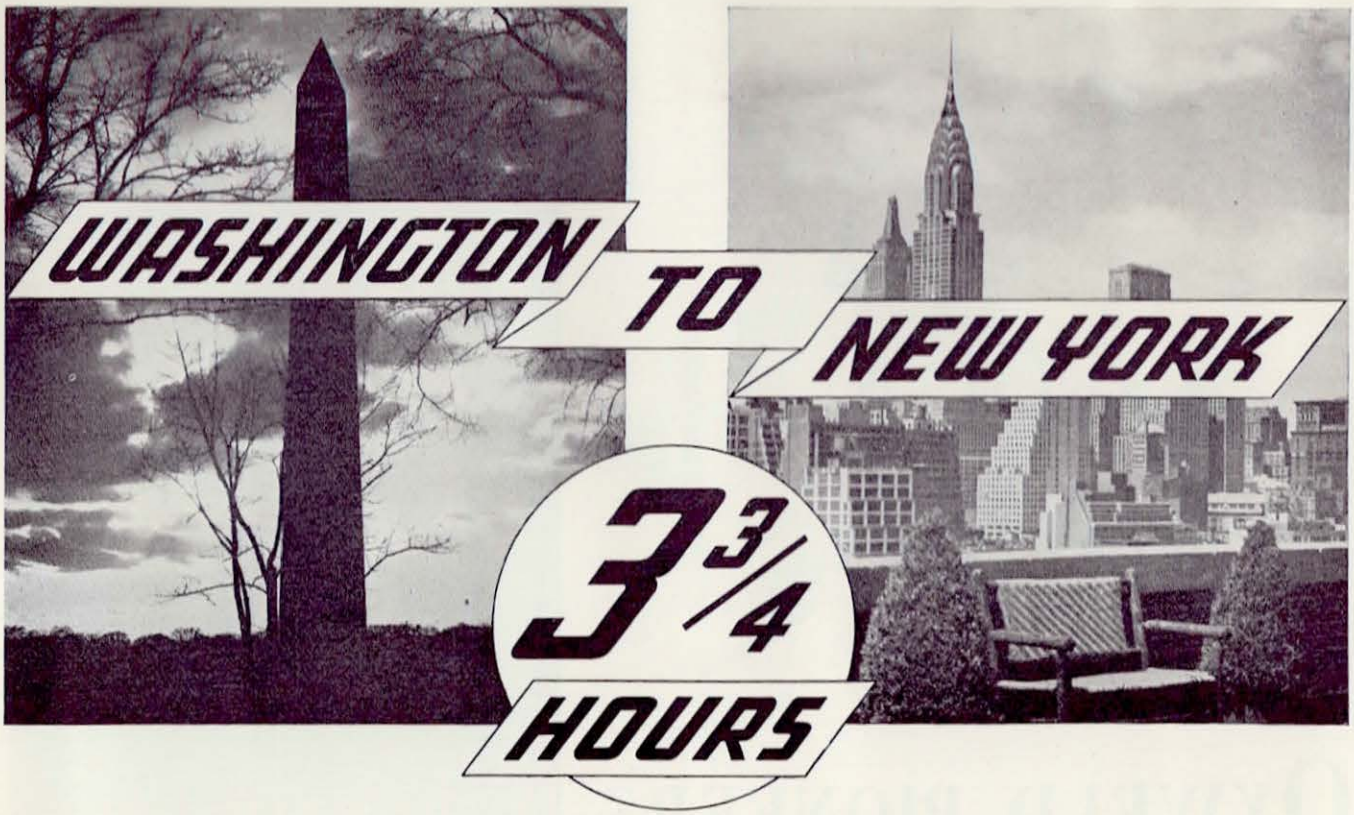
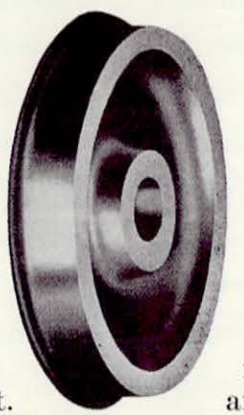


Symbol of the New Era in rail speeds that calls for these enduring wheels



A TRANSITION is taking place in the tempo of railroading. Conventional motive power is being pushed to much higher speeds; innovations in equipment are bringing scheduled speeds heretofore unheard of on rails.

Wheels take the brunt of this new pace of railroad transportation. Wear-and-tear on wheels is far more severe from both the fast running and the violent braking action that goes with it.

Bethlehem Heat-Treated Wrought-Steel Wheels maintain high standards of safety, and keep wheel-maintenance from soaring with speeds. These wheels derive unbounded strength and endurance from the forging and rolling processes of manufacture.

On engine trucks, on tenders, on passenger cars, on special high-speed equipment, use Bethlehem Heat-Treated Wrought-Steel Wheels. Then new, higher speeds on rails won't bring new wheel-maintenance problems. These wheels are made for all kinds and capacities of cars, and for locomotive and tender trucks.

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GENERAL OFFICES: BETHLEHEM, PA.

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Railway Age

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Case hardened parts of Agathon Nickel Iron assure trouble-free service between locomotive shoppings. » » » This freedom from maintenance is due to two factors . . . a uniform, hard surface free from slag pockets—a surface that lubricates perfectly and resists wear . . . plus a tough core that withstands shock and has high shearing strength which means greater useful strength in most applications. » » » Agathon Nickel Iron is ideal for case hardened locomotive parts—heat treatment is easy and inexpensive—simply carburize and quench from the pot without spoiling the surface for smoothness. » » » For continuous, dependable service specify Agathon Nickel Iron. » » » Complete information on request. Address Department RA. » » » » » » » » » » » »

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RAILWAY AGE

Some Surprising Facts About Recovery

Recovery *is* occurring. But *why* is it occurring? This is a question of vital importance. The way in which each of us answers it probably will determine how he will vote this fall. The way the election goes probably will determine what kind of government policies affecting business, employment, the total national income, and the income of each individual we will have for years to come.

We believe the best answer available as to why recovery is occurring is afforded by the graph published herewith showing the changes that have occurred in the number of railroad cars loaded with freight from the beginning of 1929 to the end of July, 1936. The graph is so drawn as to exclude all fluctuations caused by seasonal variations, and is based on and extends the one published in these columns on July 25.

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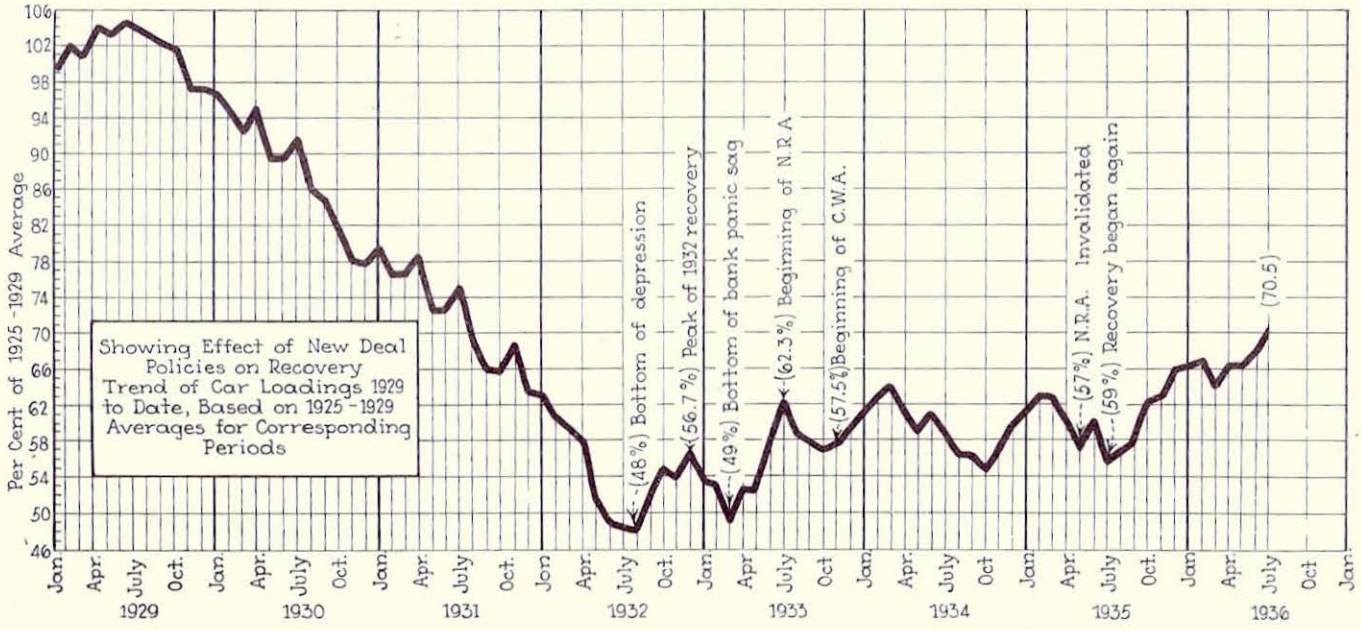
Why is it important to emphasize the upturn in business that occurred throughout the last four months of 1932? Because it is essential to determine the *causes* of recovery from its first beginning. New Dealers claim it is all due to New Deal policies. If so, probably these policies should be continued. If not, the desirability of their continuance is questionable. If none of the recovery that has occurred has been due to New Deal policies—if, in fact, they have retarded recovery—then, obviously, the *recovery* that has occurred affords no argument for their continuance, however desirable or undesirable they may be as measures of reform.

Now, plainly the recovery that occurred during the last one-third of 1932 was not due to the New Deal, because it began almost a year before the New Deal began.

When did recovery begin again? The graph shows plainly that it began again in April, 1933, following the banking crisis in the first quarter of that year, and once more continued four months, or until the end of July,



1933. It has been claimed that business in July, 1933, was abnormally active in anticipation of advances in prices due to N.R.A. and other New Deal policies. But the graph shows that the increase in business did not occur merely in July, but began in April, occurred throughout the four months April-July, inclusive, and merely culminated in July. Why is it important to emphasize this? Because the recovery that occurred during this period could not have been due to New Deal policies, as they did not begin to go into effect until July. *Therefore, it was plainly a revival and continuance of the recovery that had occurred during the last four months of 1932* and was due to the same causes.

There were fluctuations in business, but no lasting or substantial recovery during the next two years. In fact, freight loadings—allowing for seasonal variations—averaged relatively lower during the two years than they were in July, 1933, and, finally, in July, 1935, were 9 per cent smaller than in July, 1933. Why should this point be emphasized? *Because it was only during these two years that all the important New Deal policies*—N.R.A., A.A.A., huge government spending to "prime the pump" and so on—*were in full effect.*

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There have been, then, three periods of recovery since the bottom of the depression was reached—the last four months of 1932; the four months April-July, 1933, inclusive; and the twelve months since July, 1935. When has most of the recovery occurred? The answer will surprise most persons, even including opponents of the New Deal. *Almost two-thirds of it occurred within the year from July, 1932, to July, 1933; and only a little more than one-third of it has occurred in the entire subsequent three years.* If you doubt it ponder the following statistics of railroad freight car loadings:

Average weekly car loadings, July, 1932	483,176
Average weekly car loadings, July, 1933	624,597
Average weekly car loadings, July, 1936	706,387
Increase in car loadings, July, 1936, over July, 1932	223,211
Increase in car loadings, July, 1933, over July, 1932	141,421
Increase in car loadings, July, 1936, over July, 1933	81,790
Percentage of total increases occurring:	
Between July, 1932, and July, 1933	63%
Between July, 1933, and July, 1936	37%

Of the entire increase in average weekly car loadings that occurred between the bottom of the depression in July, 1932, and July, 1936, over *63 per cent* occurred between July, 1932, and July, 1933, before the New Deal policies were in effect, while less than 37 per cent of it occurred during the subsequent three years, during which all or part of the New Deal policies were in effect. The increase in average weekly car loadings in July, 1933, over July, 1932, was 141,421, while the increase in average weekly car loadings in July, 1936, over July, 1933—during a period of three years—was only 81,790. It follows that the speed of recovery during the year immediately preceding the effective application of New Deal policies was *more than five times* as fast as it has averaged during the three years of the New Deal. If in each year since July, 1933, car loadings had increased as much as they did in the first year of recovery—that ending with July, 1933—they would have averaged 1,052,000 cars in July, 1936, instead of only 706,387, and would have been almost exactly the same as in July, 1929.

Many persons largely attribute the recovery that has been occurring within the last year to government spending, and fear its reduction would cause a recession of business. But there was no huge government spending in the year ending with July, 1933, when there occurred 63 per cent of the entire increase in railroad loadings that has occurred since the bottom of the depression was reached. Why, then, attribute to government spending the much smaller improvement in business that has occurred since? It is extremely difficult to get most persons to ascertain facts, or to face them after others have ascertained and presented them. We have had bad depressions before and recovered from them. This has been a bad depression, and we are recovering from it, also. No artificial measures, including huge government spending, caused the recovery from previous depressions. Why, then, attribute the partial recovery that has been made from this one to artificial measures, and fear their abandonment—especially when the indisputable facts demonstrate that the bulk of the recovery from this depression that has thus far been made cannot, by any rational and unprejudiced person, be attributed to artificial measures, including government spending?

For Simpler Regulation

Those who were privileged to hear the address of Judge R. V. Fletcher, vice-president and general counsel of the Association of American Railroads, at the recent meeting of the accounting officers at Detroit will not soon forget what they heard. It was a "keynote"—if a word may be used which is coming into disrepute because of its connotation of politics—of a new aggressiveness and youthful vigor on the part of the railroad industry. The man who delivered this address, one bears in mind, is the principal contact between the railroads and the federal governmental authorities, and those who heard him can have no doubt whatever that the railroad attitude in the national capital is to be one of self-respecting insistence on the rights of free citizenship, and not one of hat-in-hand servility before bureaucracy and politics.

The railroads exist to serve the American people and American industry; not to provide livings for a horde of hair-splitting legalists, who now batten upon the bewildering procedural and precedental maze into which

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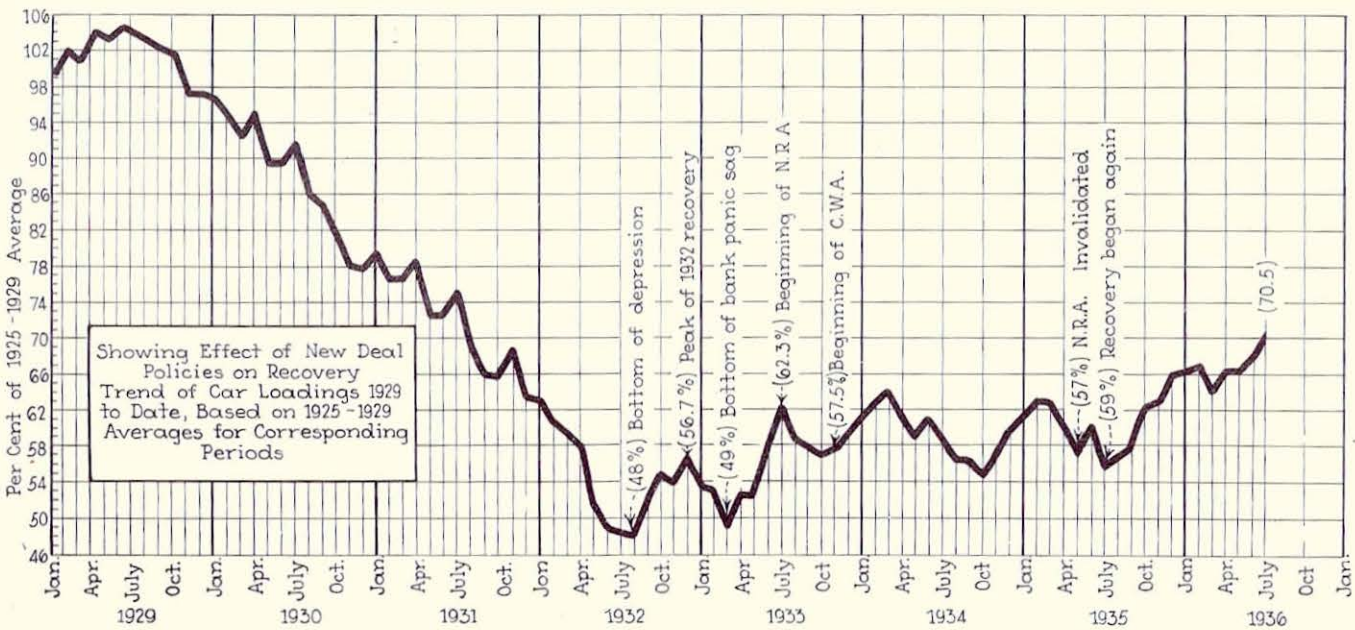

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When did recovery begin again? The graph shows that it began again in August, 1935, and has continued ever since excepting for a brief interruption last spring caused by severe weather and floods. Why is this significant? Because all the recovery since July, 1935, has occurred since the decision of the Supreme Court that invalidated N.R.A., the most important of all the New Deal policies.

There have been, then, three periods of recovery since the bottom of the depression was reached—the last four months of 1932; the four months April-July, 1933, inclusive; and the twelve months since July, 1935. When has most of the recovery occurred? The answer will surprise most persons, even including opponents of the New Deal. *Almost two-thirds of it occurred within the year from July, 1932, to July, 1933; and only a little more than one-third of it has occurred in the entire subsequent three years.* If you doubt it ponder the following statistics of railroad freight car loadings:

Average weekly car loadings, July, 1932	483,176
Average weekly car loadings, July, 1933	624,597
Average weekly car loadings, July, 1936	706,387
Increase in car loadings, July, 1936, over July, 1932	223,211
Increase in car loadings, July, 1933, over July, 1932	141,421
Increase in car loadings, July, 1936, over July, 1933	81,790
Percentage of total increases occurring:	
Between July, 1932, and July, 1933	63%
Between July, 1933, and July, 1936	37%

Of the entire increase in average weekly car loadings that occurred between the bottom of the depression in July, 1932, and July, 1936, over *63 per cent* occurred between July, 1932, and July, 1933, before the New Deal policies were in effect, while less than 37 per cent of it occurred during the subsequent three years, during which all or part of the New Deal policies were in effect. The increase in average weekly car loadings in July, 1933, over July, 1932, was 141,421, while the increase in average weekly car loadings in July, 1936, over July, 1933—during a period of three years—was only 81,790. It follows that the speed of recovery during the year immediately preceding the effective application of New Deal policies was *more than five times* as fast as it has averaged during the three years of the New Deal. If in each year since July, 1933, car loadings had increased as much as they did in the first year of recovery—that ending with July, 1933—they would have averaged 1,052,000 cars in July, 1936, instead of only 706,387, and would have been almost exactly the same as in July, 1929.

Many persons largely attribute the recovery that has been occurring within the last year to government spending, and fear its reduction would cause a recession of business. But there was no huge government spending in the year ending with July, 1933, when there occurred 63 per cent of the entire increase in railroad loadings that has occurred since the bottom of the depression was reached. Why, then, attribute to government spending the much smaller improvement in business that has occurred since? It is extremely difficult to get most persons to ascertain facts, or to face them after others have ascertained and presented them. We have had bad depressions before and recovered from them. This has been a bad depression, and we are recovering from it, also. No artificial measures, including huge government spending, caused the recovery from previous depressions. Why, then, attribute the partial recovery that has been made from this one to artificial measures, and fear their abandonment—especially when the indisputable facts demonstrate that the bulk of the recovery from this depression that has thus far been made cannot, by any rational and unprejudiced person, be attributed to artificial measures, including government spending?

For Simpler Regulation

Those who were privileged to hear the address of Judge R. V. Fletcher, vice-president and general counsel of the Association of American Railroads, at the recent meeting of the accounting officers at Detroit will not soon forget what they heard. It was a "keynote"—if a word may be used which is coming into disrepute because of its connotation of politics—of a new aggressiveness and youthful vigor on the part of the railroad industry. The man who delivered this address, one bears in mind, is the principal contact between the railroads and the federal governmental authorities, and those who heard him can have no doubt whatever that the railroad attitude in the national capital is to be one of self-respecting insistence on the rights of free citizenship, and not one of hat-in-hand servility before bureaucracy and politics.

The railroads exist to serve the American people and American industry; not to provide livings for a horde of hair-splitting legalists, who now batten upon the bewildering procedural and precedental maze into which

federal regulation has degenerated. What industry and the American people need are rates which will move the business of the country; and not the dog-in-the-manger prohibitions (such as the Fourth Section) which inhibit rather than foster the free movement of interstate commerce.

We hope that others will take up the demand for a simplification of regulation which Judge Fletcher has uttered (indeed several railroad spokesmen have done so already) and will urge it repeatedly upon the public and industrial leaders until relief is forthcoming. The public respects individuals and institutions who are upright, and have the courage of their integrity to insist upon treatment as honorable and competent citizens, and not as criminals or mendicants. The railroads are no exception to this general observation.

The streamlined train and modern high-speed freight service are not evidences merely of technical advance in the art of transport. More important than that, they symbolize a new aggressive spirit, born of the emergence of success in surmounting almost insuperable difficulties. Individuals who have won the battles through which the railroads have passed in recent years have an experience and an impetus before which the simpler difficulties of a period of recovery should quickly dissolve.

Railroads Are Chided on Low Fare Results

Typical of many hindsight "I told you so" editorials in the "liberal" press on the experiment with passenger rate reductions in the East is an article by Oswald Garrison Villard in the "Nation." Mr. Villard is a kindly and somewhat muddled old gentleman who has lived a life of ease as a "parlor pink" on the proceeds of a fortune accumulated in the railroad business by his father, Henry Villard.

> Well, well—(he writes) just look at those railroad earnings for June! It actually begins to appear that a government official knew what was better for our rail-transportation companies than the railroads themselves.

Mr. Villard was a publisher for many years and has assumed the role of an elder statesman and critical authority of journalism on many occasions. But his article is filled with inaccuracies, some of which appear just a little too deft not to be deliberate. To read his article, one would think that, with the exception of the Baltimore & Ohio, all the railroads had opposed any reduction whatever in rates, which of course is not true. Even the three roads which opposed the specific reductions ordered by the Commission proposed schedules of reductions of their own.

Mr. Villard shows considerable ingenuity in his selection of figures to prove his thesis. He chooses the New York Central, which of the three roads which led the fight against the Interstate Commerce Commission reduction order, had the largest increase in passenger revenue in June this year over last year. He mentions this increase, which was 11.2 per cent (but only 6.6 per cent on the Pennsylvania and 1.4 per cent on the New Haven, which results somehow he overlooked). He admits there would have been some increase even if the old rates had been maintained, but adds "I cannot believe that there would have been such an extraordinary increase if the old fares had been maintained."

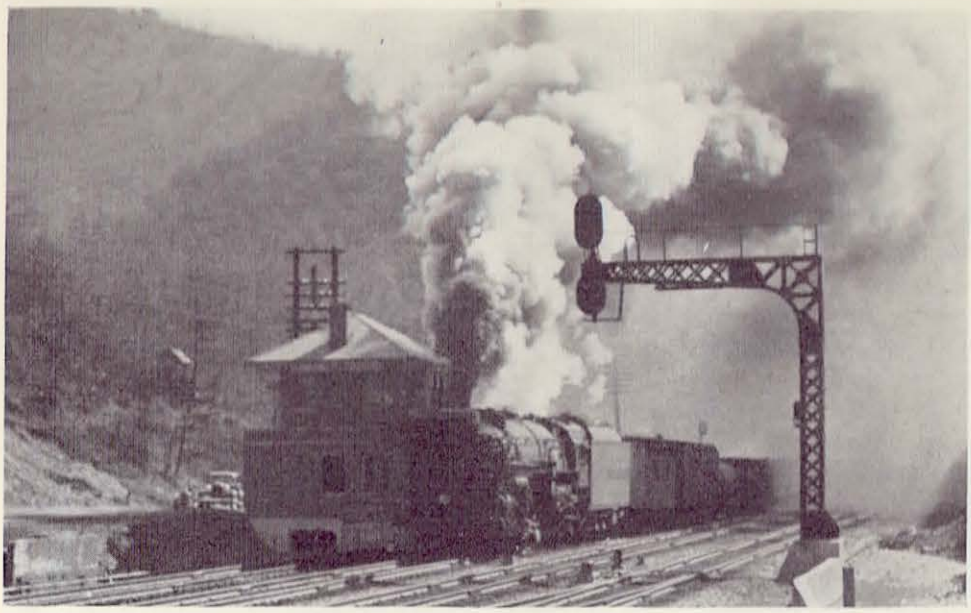
Perhaps Mr. Villard knows no more about this subject than what he reads in the papers, but, even so, that source would have informed him that the Eastern railways had an increase in passenger revenues of about 10 per cent in the first five months of the year, but in June, under the reduced rates, this increase was only about 5 per cent. So the railroad officers who foresaw some initial decline in revenue under what it otherwise would have been were not such stupid fellows as Mr. Villard would have his readers think.

One amusing inaccuracy in the article is in ascribing the "credit" for the reduction to "Joseph B. Eastman, the Co-ordinator of roads and head of the Interstate Commerce Commission" (sic). And to think of all the hard work that Commissioner Porter put in to argue himself and his colleagues into some kind of justification for issuing this order! Such fame as Mr. Eastman enjoys among the "liberals" (and to his credit be it said that he doesn't deserve half of it) took years to acquire, so don't lose heart, Mr. Porter.

But it was a nice increase in passenger business anyhow, wasn't it?

A Union Employee's Interest in Railroad Prosperity

> Brothers, the unfairness of this situation [subsidized highway and waterway competition] must be apparent to any observer, and it is our duty to take an active interest in legislation affecting us, not only as taxpayers but as railroad wage earners.
>
> We have transportation to sell, and our employment and the employment of new men depend upon our ability to render service and sell our product. There are many channels thru which we may advertise our service. Do the merchants and others with whom you deal patronize the railroads whenever possible?
>
> I don't feel that I am violating an obligation of our Brotherhood in making every effort to assist my employers, and as a matter of fact I feel that I am furthering the cause of our order in humbly striving to increase our "sales" and defend our cause. May I suggest that this question be taken up at lodge meetings and discussed either under the head of "New Business" or "Debate for the Good of the Order."
>
> —*W. B. Gatchell in the B. of L. E. Magazine.*



Westbound Freight Train Passing "A" Cabin

Centralized Traffic Control on the Chesapeake & Ohio

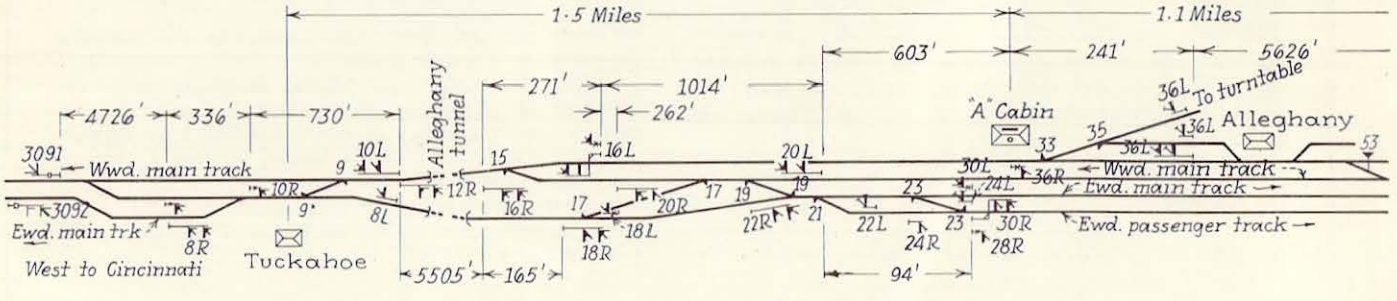
Installation at Alleghany, Va., extends over five miles of double-track territory and replaces three interlockings

THE Chesapeake & Ohio has made an extensive installation of remotely-controlled power switches and signals to facilitate train operations on the five miles of line over the summit of the Allegheny mountains, near Alleghany, Va. This new signaling project combines into one C.T.C. control machine, the control of which was formerly three interlockings, and in addition, it provides control of signals for directing train movements in this five-mile area. The traffic handled daily over the territory includes 8 passenger trains, 4 manifest freight trains, and from 12 to 16 extra freight trains. In addition, there is a return move of a helper engine for some of the tonnage freight trains. Thus the total traffic ranges from 30 to 40 movements daily.

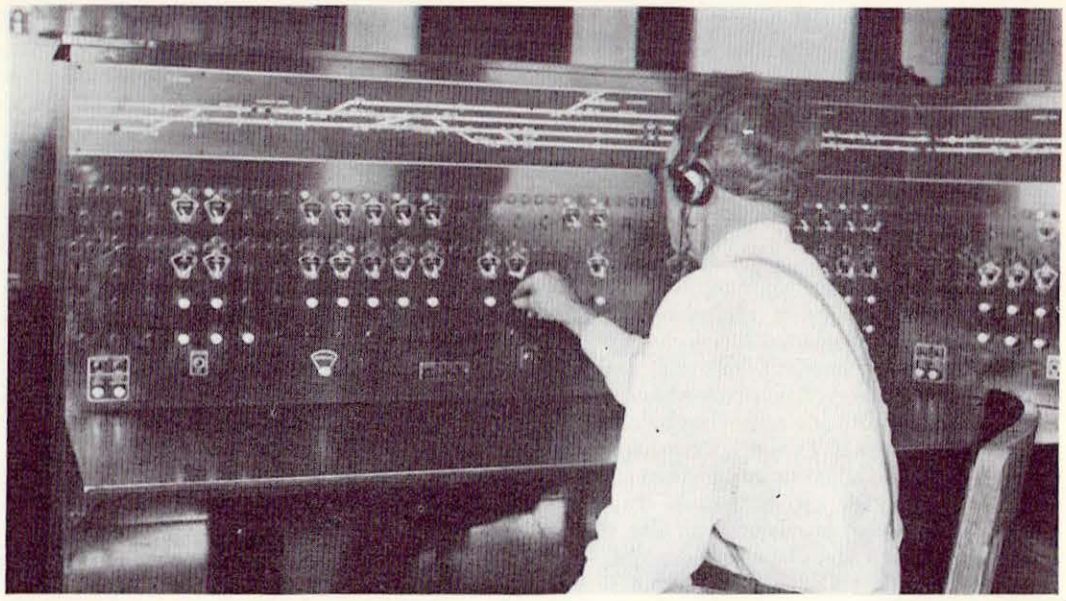
Approaching from the east on an ascending grade of 1.3 per cent, the double-track line passes through Kelly's Tunnel, near M. P. 302, and about 3,000 ft. west of the tunnel a center passing siding starts and extends for about one mile westward, with a facing-point crossover just west of the west end of the siding. This siding layout, together with an end of double-track for the previous single track westward through the old Lewis Tunnel, was formerly operated by a 24-lever, electro-mechanical interlocking plant. When a second single-track Lewis Tunnel was constructed, the old tunnel was assigned for the westward track and the new tunnel for the eastward track.

At East Alleghany, at the west end of the old single-track Lewis Tunnel, there was previously a 24-lever, electro-mechanical plant, which included the end of double-track switch and the switches for the east end of two sidings which extend westward to Alleghany. When the new Lewis Tunnel was completed and the double track extended from Jerry's Run to East Alleghany, the track layouts at these two points were revised accordingly.

At Alleghany, 1.25 miles west of East Alleghany, the track layout includes several crossovers and switches



Track and Signal Plan of the C.T.C. Installation Showing the Location



C.T.C. Machine Is Arranged So That the Operator Can Reach All the Levers Without Leaving His Chair

to handle the west end of the two passing tracks and connections to the two main tracks extending westward through the two separate single-track Alleghany tunnels, the summit of the grade approaching from each direction being located about 600 ft. east of the east portals of these tunnels. For eastward tonnage trains, the helper engines are attached at Hinton, W. Va., 51 miles west of Alleghany, and are cut off at Alleghany. For westward trains, they are attached at Clifton Forge, 29 miles east, and are cut off at East Alleghany. The track layout at Alleghany and at East Alleghany is arranged to facilitate cutting the helpers off, and for moves to and from the turntable at Alleghany.

Prior to the installation of the C.T.C. machine, a 32-lever mechanical interlocking machine was in service at "A" Cabin, Alleghany, to handle the switches and crossovers at the west end of the passing tracks and for controlling the home interlocking signals, including remote control of the signals at the west end of old Alleghany Tunnel, near Tuckahoe, W. Va. During the construction of the new tunnels, temporary changes were made in the track layout at the three old interlocking plants which required a rearrangement of the interlocking facilities, and after the tunnel work was completed, arrangements were made to extend the westward passing siding at Alleghany so that it would hold long freight trains. The extension of this siding made it necessary to rearrange some of the crossovers and switches at Alleghany.

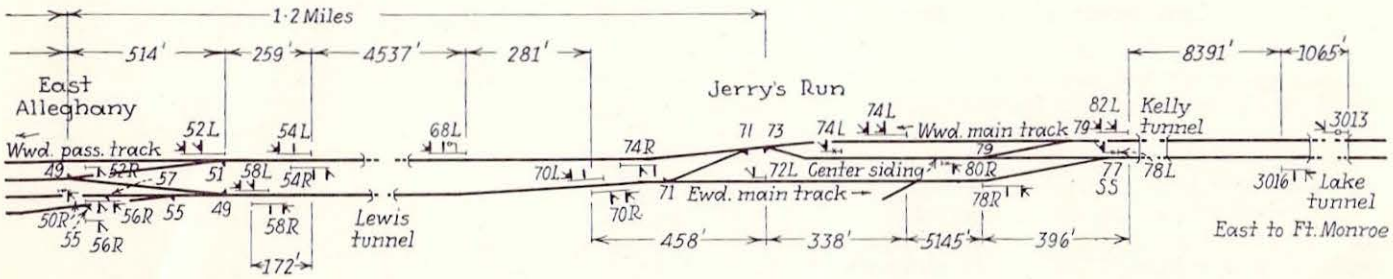
New Interlocking and Remote Control

The track changes in connection with the extension of the westward siding involved major revisions in the interlocking arrangement at Alleghany which would have made it necessary to install a new interlocking machine, and as it was desirable to arrange for train operation in either direction by signal indication on both main tracks through the territory—Tuckahoe to Jerry's Run—it was decided, as a part of the program, the logical procedure would be to abandon the three old interlockings, install power-operated switches and signals, and control all these facilities from a new C.T.C. type machine in a new tower to be known as "A" Cabin, located just west of Alleghany station. By arranging the signals for either-direction operation on the two main tracks, train movements would be greatly expedited in case of land slides or trouble developing in one of the tunnels. Furthermore, it would permit turning one of the tunnels over to track or other forces for certain hours of the day, thus facilitating their work. Another advantage of either-direction operation is that run-around movements can be made, thus keeping all trains moving rather than putting one of them on a siding.

The switches in the general vicinity of the tower are operated by electro-pneumatic switch and lock movements, while low-voltage electric switch and lock movements are used at Tuckahoe, East Alleghany, and Jerry's Run, with the exception of the switch at the east end of the eastward passing siding at Jerry's Run, which is a spring switch. The signals throughout the entire territory are the color-light type. All signals are located immediately to the right of the track governed, standard two-arm signals being provided for all through train movements. Color-light dwarfs displaying two, three and four aspects, as required, are used to control low-speed train movements.

The C.T.C. Control Machine

The C.T.C. type control machine in "A" Cabin is arranged in two panels, the end section at the right being



of the Three Track Layouts at Which Interlockings Were Formerly in Service

set at an angle with the main section, so that the operator can readily reach any of the levers without leaving his chair. The machine has 15 levers for the control of 7 single switches, 2 derails and 6 crossovers; 23 levers for the control of 44 signals, 2 traffic levers and 4 levers for the control of electric switch locks and as selector levers on hand-operated switches. The levers are of the usual miniature type, each lever being equipped with indication repeater lamps, so that the leverman knows the position of each switch and the aspect of each signal. An illuminated track diagram, mounted just above the levers, indicates the location of all trains on the main tracks in the five-mile controlled territory.

Mounted in a small case to the right of the C.T.C. machine is a one-lever controller used for the control of the ventilating fans for removing locomotive smoke from the westward Lewis Tunnel. Normally, the operation of these motor-driven ventilating fans is controlled automatically by track circuits as a train approaches the tunnel. However, provision was also made for the fans to be operated manually when desired. This is accomplished by the operator at "A" Cabin throwing the lever to the "down" position to cause the fans to operate independent of the track circuit control. On the other hand, when a passenger train is being run through the tunnel, for which it is not necessary for the fans to be operated, the operator can cut off the track circuit control and prevent the fans from operating by throwing the lever to the "up" position. A yellow lamp on the C.T.C. machine is lighted when the fans are in operation, and a red lamp is lighted when the fans are not in operation. The control of the fan is by direct wire, but the indications between the fan house at the tunnel and "A" Cabin are transmitted by code.

Train Order Signal Control

"A" Cabin is a block office for the delivery of train orders when required. Two color-light type signals, one for eastward movements and the other for westward movements, are mounted on the track side of the tower, and are designated as train order signals. These signals are controlled by a small two-lever controller mounted on the operator's desk at the right of the C.T.C. machine. The levers are normally on center and the signals normally dark, indicating no orders. When the lever is thrown down, the signal displays a yellow aspect indicating that a non-restricting "19" order is to be delivered, but when the lever is thrown up, the signal displays red indicating that the train is to stop for a "31" or restricting "19" order. The aspect displayed by either signal is repeated on the controller so that the operator knows that the signal aspects correspond to the position of the lever, and he also has a check against a burned out lamp bulb. Under normal operating conditions, train movements in the territory from Jerry's Run to Tuckahoe are directed by signal indications without written train orders. The orders, when issued at "A" Cabin, are ordinarily with reference to moves or track conditions beyond the control zone.

Construction of "A" Cabin

The switches and signals throughout the area from the east portal of Alleghany Tunnel eastward to Alleghany station are controlled by direct wire connections. However, the code control system, using only two line wires, is used for the control of the functions at East Alleghany and Jerry's Run. A separate two-wire code circuit extends westward for the control of the switches and signals at Tuckahoe. The section of the installation in the general vicinity of "A" Cabin, although a part of the complete C.T.C. project, is in reality an electro-pneumatic interlocking, employing the all-relay principle, so far as interlocking of the functions is concerned.

Beyond the limits of the Alleghany area, the control of the switches and signals is accomplished by the time-coding system. Furthermore, in the remote areas, low-voltage d-c. electric switch machines are used, instead of electro-pneumatic machines as employed at Alleghany. The field control batteries, relays, rectifiers and equipment, including coding apparatus, are located in four centrally located houses, one at the east end of Jerry's Run, one at the west end of this layout, one at East Alleghany and one at Tuckahoe.

This change over from electromechanical interlockings to power switches and signals, controlled remotely from the C.T.C. machine, was planned and installed by the signal forces of the Chesapeake & Ohio.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended August 1 totaled 747,551 cars, an increase of 16,489 cars above the total for the preceding week and an increase of 152,254 cars, or 25.6 per cent, as compared with the corresponding week last year. This was the largest number of cars loaded in any one week since October 17, 1931. Loading of grain and grain products and ore showed reductions as compared with the week before but all commodity classifications showed increases as compared with last year's figures. Miscellaneous freight increased 67,134 cars. The summary as compiled by the Car Service Division of the Association of American Railroads, follows:

Revenue Freight Car Loading

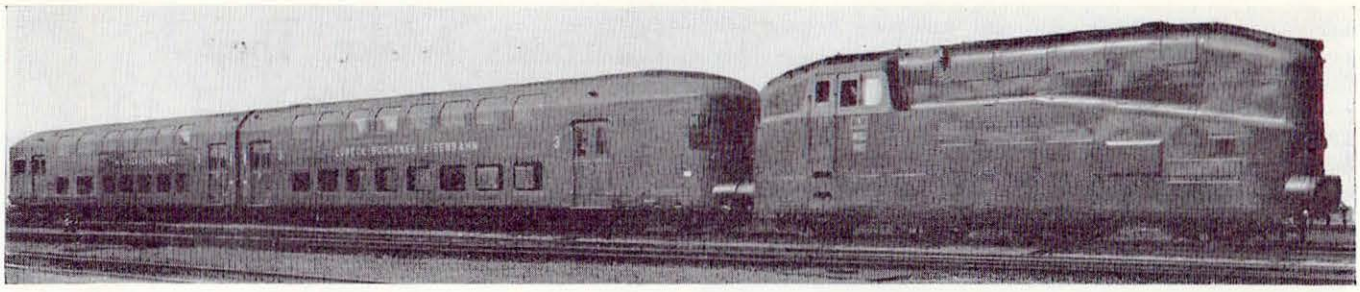
For Week Ended Saturday, August 1

Districts	1936	1935	1934
Eastern	159,208	131,945	130,266
Allegheny	149,885	113,659	112,614
Pocahontas	49,716	38,872	39,097
Southern	98,281	80,371	82,573
Northwestern	122,458	90,375	96,968
Central Western	110,788	92,000	99,825
Southwestern	57,215	48,075	51,317
Total Western Districts	290,461	230,450	248,110
Total All Roads	747,551	595,297	612,660
Commodities			
Grain and Grain Products	50,970	41,735	42,835
Live Stock	15,423	9,531	27,746
Coal	124,672	91,985	100,187
Coke	8,842	5,125	4,735
Forest Products	35,719	29,256	21,509
Ore	53,558	32,908	30,170
Merchandise L.C.L.	163,948	157,472	159,918
Miscellaneous	294,419	227,285	225,560
August 1	747,551	595,297	612,660
July 25	731,062	595,572	610,042
July 18	720,402	592,672	616,040
July 11	724,324	565,502	604,192
July 4	649,759	471,126	520,741
Cumulative Total, 31 Weeks	20,163,968	17,980,898	18,400,298

Car Loading in Canada

Car loadings in Canada for the week ended August 1 totaled 46,471, as against 41,689 in 1935 and 44,706 in the preceding week, according to the compilation of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
August 1, 1936	46,471	22,324
July 25, 1936	44,706	21,984
July 18, 1936	45,496	21,280
August 3, 1935	41,689	19,457
Cumulative Totals for Canada:		
August 1, 1936	1,353,583	720,790
August 3, 1935	1,329,813	673,459
August 4, 1934	1,310,808	698,974



Luebeck-Buechen Railroad Double-Deck Articulated Coach and Streamline Steam Locomotive

German Road Installs Unique Train

Luebeck-Buechen Line develops a double-deck articulated coach and steam locomotive with remote control

THE Luebeck-Buechen Railway of Germany has developed a two-unit articulated coach for use between Hamburg and Luebeck, about 40 miles, and between Hamburg and Travemuende, about 52 miles, as well as for handling suburban traffic between Hamburg and Ahrensburg. Not only does the coach present an interesting solution of the problem of reducing weight per passenger seat, but it also includes provisions for remote control of the streamline steam locomotive with which the coach is hauled so that the train does not require turning at terminals. In one direction the coach is pulled by the locomotive and in the other is pushed by the locomotive at the rear end of the train.

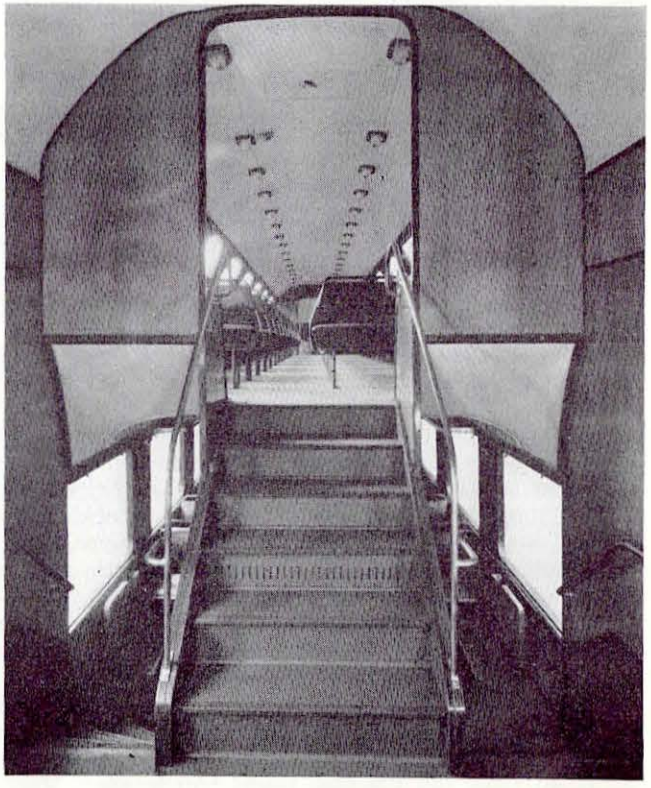
The first of these coaches to be built was received from the Linke-Hoffmann-Werke Company of Breslau and placed in service with a 2-4-2 type tank locomotive early in April. The coach has a total seating capacity of 300 in two decks. One unit is given over completely to third-class with a small baggage compartment in which hand luggage can be stored and checked by the train porters. There are seats in the two decks for 156 passengers. The other unit is divided between second and third class, of which 42 seats are provided for the former and 102 for the latter.

The car is 151 ft. 4½ in. long over the buffers with the spacing between the truck centers 64 ft. 8¼ in. The overall height above the rail is 14 ft. 2 in. and the coach bodies have an outside width of 9 ft. 1¼ in. The trucks, which have longitudinal equalizer springs, have a wheel base of 9 ft. 10 in. and are carried on axles fitted with roller-bearing journal boxes and wheels 35⅜ in. in diameter. The car weighs 156,527 lb., which is equivalent to a weight per passenger seat of 521 lb. The combined weight of the steam locomotive and coach is 310,657 lb., so that the total weight of the train averages only 1,035 lb. per passenger seat.

The cars are entered through sliding side doors near the ends of each body unit which open into vestibules with floors 3 ft. 5 in. above the rail. From each vestibule a central stairway ascends to the upper deck and two side stairs descend to the lower deck which is dropped down between the trucks to clear the rail by 11⅝ in. The ceiling height in the lower deck is 6 ft. 2½ in., and in the upper deck, 6 ft. 4⅜ in. The third-class seats are arranged for three passengers on one side of the aisle and two on the other.

The cars are air conditioned throughout and the windows are fitted with fixed sash. Both the steam-heating and the cooling coils are mounted in space provided above a drop ceiling over the vestibules at the articulation ends of the two body units. The air from these units is distributed to the upper and lower deck compartments through ducts located along either side of the lower deck ceiling. Lateral ducts extend upward and downward from the main ducts behind the pier panels between the windows opening into the compartments through louvers near the tops of the windows. The cooling system is ice activated and the system provides for a change of air twelve times per hour.

The third-class compartments are fitted with a simple walk-over type of seat upholstered in red-brown leather. The walls are finished in light German oak, with ceilings in ivory lacquer. The floor is covered with gray linoleum. The second-class seats are of the fixed type arranged in sections, with the inclination of the back



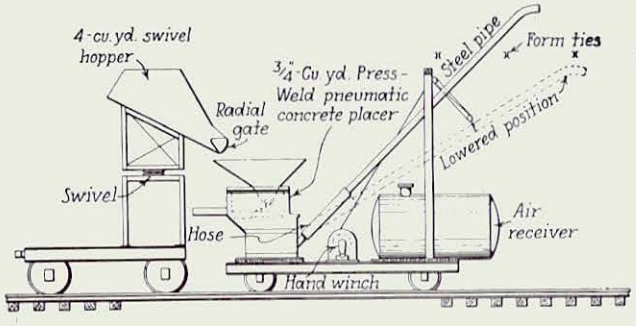
Upper- and Lower-Deck Third-Class Compartments from the Vestibule

wall footings, with pipe laterals extending into the track area at intervals. At the south end of the tunnel, the new drainage system was connected with a new 12-in. corrugated iron pipe line on the west side of the track.

The new lining, which at no point was allowed to extend inside the existing timber face, was reinforced with 6-in., 25-lb. H-beam sets, spaced 12 in. to 24 in. center to center, depending upon conditions, and with horizontal and vertical rods placed in the sides and arch, 3 in. back from the face. This location of the rods placed them approximately midway between the inner faces of the H-beams and the inside face of the lining. The vertical rods, ¾ in. in diameter, were placed on 6-in. centers, while the horizontal rods were ½-in. square bars placed on 24-in. centers.

Jacking Beams Support Old Lining

In the lining of the tunnel, a procedure was followed which at no time left any part of the roof unsupported, and which also did not disturb the old original timber lagging that formed a back form for the new concrete lining, and saved thousands of yards of concrete which would have been wasted otherwise in filling voids back to the natural tunnel face. The first step in the work, which was carried out progressively through the tunnel, was to excavate for and to pour the 2-ft. by 2-ft. horizontal concrete cross struts which were placed beneath the track on 16-ft. centers throughout the tunnel. This was done without special difficulty by excavating between spread ties with picks and hand shovels, and by pouring the concrete to form the individual struts from a concrete hopper mounted on a push car. A feature of these struts is that they were cast with their upper end corners beveled, to provide footings for jack supports of the old timber lining while its sills were being undermined in sections to construct the new wall foundations.



Sketch Showing Mounting of Concrete Delivery Hopper and Arrangement of Facilities on the Concrete Placer Car

Having constructed the struts, the next operation was to transfer the load of the old lining to these struts temporarily. This was done progressively through the tunnel, a panel of 16 ft. at a time, by first attaching a specially-built steel corbel to each side wall post on both sides of the tunnel, and by then transferring the load on all of these posts to adjacent concrete struts through the corbels and a 24-in., 94-lb. jacking beam, 24 ft. long, placed beneath them, which was supported by jacks resting on the beveled faces of the floor struts.

The corbels were merely a pair of 6-in. by 6-in. angles, 12 in. long, riveted together and provided with a steel base plate, which were secured to the posts by means of four double-headed drift bolts. The bolts used were 12 in. long and the double-head type was employed so that the bolts could be withdrawn readily for repeated used in moving the corbels ahead for subsequent settings of the jacking beams.

The jack units employed were built up of steel house movers' jacks 3-in. in diameter, each mounted in a section of 4-in. double-strength pipe of proper length for the specific setting of the corbels and the jacking beams. These units were placed on an angle of approximately 30 deg. from the vertical, and, when in position, lay entirely outside the minimum clearance lines required for train operation. The angularity between the bases of the jacking beams and the jack heads was taken care of by means of wooden wedge blocks.

In addition to the jacking arrangement for supporting the old timber lining while it was being undermined, temporary timber braces, placed practically horizontal, were used where necessary between the bottoms of the old wall posts and the ends of the track ties to resist any lateral thrust on the side wall which might develop. Throughout, the jacking and bracing on each side of the tunnel was balanced by that on the opposite side.

With a panel of the old lining supported as described, the old vertical timbers were cut off directly at the top level of the new footings to be poured, using pneumatic saws, hand axes and chisels as found best suited, and then the length of timber sill between consecutive floor struts was removed. Proceeding simultaneously on opposite sides of the tunnel, the necessary excavation for the new wall footings was then made. This was largely in soapstone and soft shale.

After the new concrete footings and sills were formed, with all reinforcing and drain tiles in place, the corbels, beams and jacks were removed, transferring the loads on the old wall posts to the new footings. The jacking equipment was then moved ahead to the next section, and the operations were repeated, leaving behind only the horizontal bracing between the posts and track ties to insure against inward movement of the old timber side walls. In this manner, the foundations for the new concrete lining, enclosing the new tile drainage lines, were completed throughout the tunnel before any of the relining work proper was started.

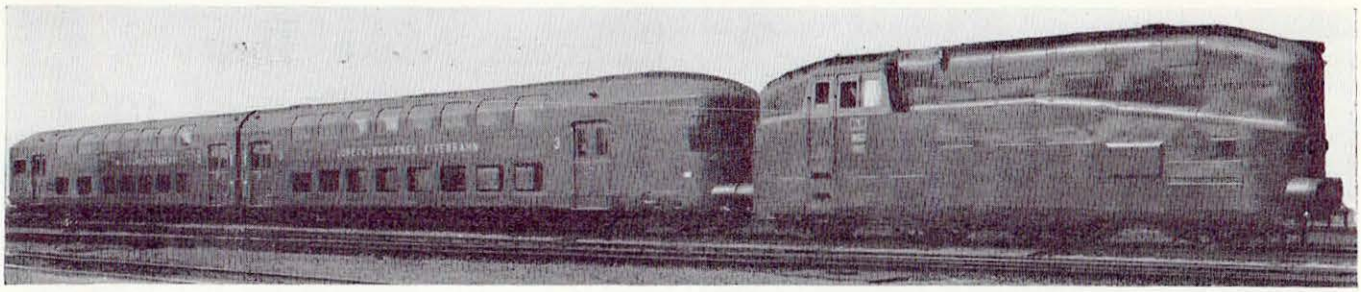
Lining Work Was Simple

The method of replacing the old timber sets with the new steel sets was comparatively simple, the work being done from a specially built scaffold car and facilitated by the use of an air hoist for handling the timbers and new steel. The H-beam sets, the individual sections of which were fabricated in the shop with end bearing or connection plates welded to their ends, were erected from the scaffold car, all connections between the different pieces being made with ordinary machine bolts. Where necessary, because of variations in the cross section of the tunnel, the bottoms of the new posts were burned off to proper length, and then wedged into position.

In carrying out the erection work, it was the general practice to replace every alternate timber set first, and then to go back and fill in the additional steel sets by removing the remaining timber sets progressively. All of the new steel sets were set back tight against the original timber lagging, which was not disturbed.

The placing of the concrete lining was carried out as an entirely separate operation and was done through the use of a Blaw-Knox retractable steel form 30 ft. long, which provided clearance for normal train operation when set in place. This form was moved from position to position by giving it support on the high scaffold car, and was raised into position for pouring by means of 15-ton screw jacks placed along its lower edges at intervals of 10 ft., with bearing directly on the inward projections of the new wall footings.

The rod and bar reinforcing in the lining was placed from the scaffold car when not in other service, and was securely wired together and clipped to the H-beams



Luebeck-Buechen Railroad Double-Deck Articulated Coach and Streamline Steam Locomotive

German Road Installs Unique Train

Luebeck-Buechen Line develops a double-deck articulated coach and steam locomotive with remote control

THE Luebeck-Buechen Railway of Germany has developed a two-unit articulated coach for use between Hamburg and Luebeck, about 40 miles, and between Hamburg and Travemuende, about 52 miles, as well as for handling suburban traffic between Hamburg and Ahrensburg. Not only does the coach present an interesting solution of the problem of reducing weight per passenger seat, but it also includes provisions for remote control of the streamline steam locomotive with which the coach is hauled so that the train does not require turning at terminals. In one direction the coach is pulled by the locomotive and in the other is pushed by the locomotive at the rear end of the tram.

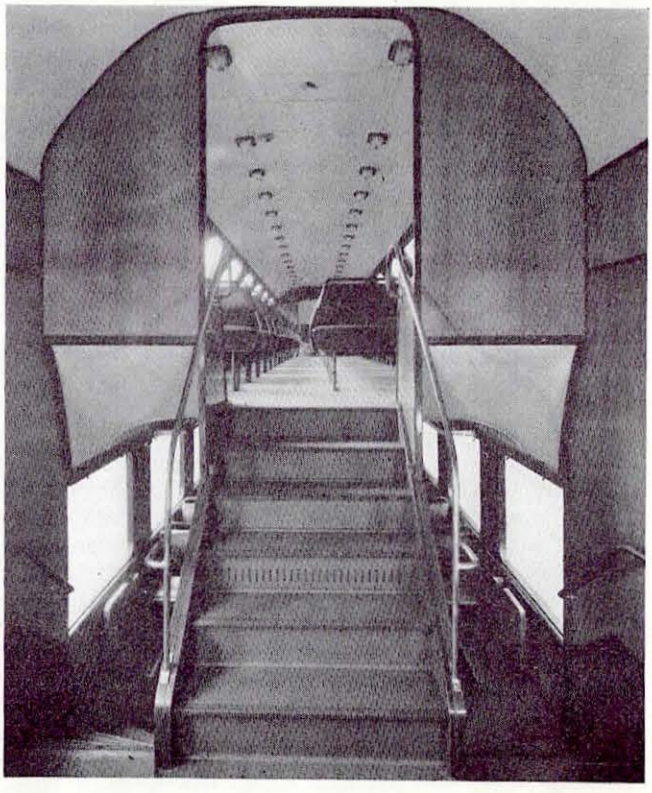
The first of these coaches to be built was received from the Linke-Hoffmann-Werke Company of Breslau and placed in service with a 2-4-2 type tank locomotive early in April. The coach has a total seating capacity of 300 in two decks. One unit is given over completely to third-class with a small baggage compartment in which hand luggage can be stored and checked by the train porters. There are seats in the two decks for 156 passengers. The other unit is divided between second and third class, of which 42 seats are provided for the former and 102 for the latter.

The car is 151 ft. 4½ in. long over the buffers with the spacing between the truck centers 64 ft. 8¼ in. The overall height above the rail is 14 ft. 2 in. and the coach bodies have an outside width of 9 ft. 1¼ in. The trucks, which have longitudinal equalizer springs, have a wheel base of 9 ft. 10 in. and are carried on axles fitted with roller-bearing journal boxes and wheels 35⅜ in. in diameter. The car weighs 156,527 lb., which is equivalent to a weight per passenger seat of 521 lb. The combined weight of the steam locomotive and coach is 310,657 lb., so that the total weight of the train averages only 1,035 lb. per passenger seat.

The cars are entered through sliding side doors near the ends of each body unit which open into vestibules with floors 3 ft. 5 in. above the rail. From each vestibule a central stairway ascends to the upper deck and two side stairs descend to the lower deck which is dropped down between the trucks to clear the rail by 11⅝ in. The ceiling height in the lower deck is 6 ft. 2½ in., and in the upper deck, 6 ft. 4⅜ in. The third-class seats are arranged for three passengers on one side of the aisle and two on the other.

The cars are air conditioned throughout and the windows are fitted with fixed sash. Both the steam-heating and the cooling coils are mounted in space provided above a drop ceiling over the vestibules at the articulation ends of the two body units. The air from these units is distributed to the upper and lower deck compartments through ducts located along either side of the lower deck ceiling. Lateral ducts extend upward and downward from the main ducts behind the pier panels between the windows opening into the compartments through louvers near the tops of the windows. The cooling system is ice activated and the system provides for a change of air twelve times per hour.

The third-class compartments are fitted with a simple walk-over type of seat upholstered in red-brown leather. The walls are finished in light German oak, with ceilings in ivory lacquer. The floor is covered with gray linoleum. The second-class seats are of the fixed type arranged in sections, with the inclination of the back



Upper- and Lower-Deck Third-Class Compartments from the Vestibule

adjustable by moving the seat cushions forward or backward. The seats are covered with orange plush and are also provided with movable pillows. The walls of these compartments are finished in a close grain Caucasian walnut with a dull polish and the ceilings are in light maple with gray linoleum on the floor.

Ample light is supplied from diffusing-glass ceiling fixtures. The lighting generators are mounted on the middle truck and the batteries are stored inside the car under the stairs to the upper level.

Second-Class Lower-Deck Compartment

One of the most interesting features in these coaches is the control compartment at each end from which the steam locomotive may be operated by means of an electric remote-control device. This device includes an electric motor and chain drive for the movement of the steam controls on the locomotive. This is arranged so that the control includes a "deadman" device, the compressed-air cylinder for closing the throttle being operated simultaneously with the operation of the brakes when the deadman control functions. A loud speaker and bell device provides communication between the engineman's station in the coach and the fireman on the locomotive.

The tank locomotive is completely enclosed in cowling. It includes a locomotive type boiler of conventional construction with tubes 12 ft. 5 in. long and a firebox having 15.1 sq. ft. The evaporating heating surface amounts to 811 sq. ft. and the superheating surface to 280 sq. ft., amounting to 1,091 sq. ft. of combined heating surface. The boiler carries a pressure of 227 lb. per sq. in. and, with 15¾-in. by 26-in. cylinders and 78-in. driving wheels, provides a tractive force of 14,100 lb. (with an m.e.p. factor of 75 per cent). The total weight of the locomotive is 154,130 lb., of which 80,483 lb. is on the drivers. The water tank capacity is 2,046 gallons and the fuel capacity 3.9 tons.

The locomotive and coach are fitted with the Scharfenberg coupler, a tightlock coupler which registers by the pin-and-funnel principle and carries automatic hose connectors. When two couplers meet the vehicles are coupled automatically as with the hinged knuckle type standard in America. Unlike the latter, however, when one coupler of a united pair is released both release automatically and both are equally ready for engagement without further attention. Stop cocks on the brake hose are closed automatically when the coupler heads are separated.

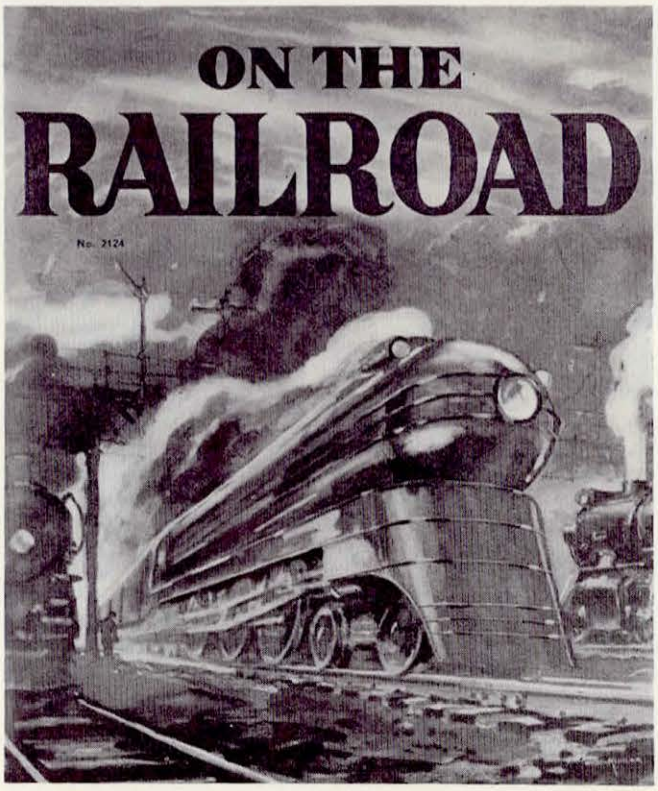
The train is designed to operate at a speed of 75 miles an hour. The schedule on the 40-mile run between Hamburg and Luebeck is 40 min. Water enough is carried to make the 104-mile round trip between Hamburg and Travemuende without taking water.

Railroads Make Their Debut in the "5 and 10"

IN large type and simple language, with beautiful illustrations, Colonel Robert Henry, head of the A.A.R. publicity organization, has told the story of the railroads in a book on sale for a dime in the "Five and Ten" stores throughout the country. Illustrations are in part photographs and in part reproductions in color of water color paintings by Otto Kuhler, well-known artist and industrial designer who has specialized on railroad subjects. Saalfield, of Akron and New York, is the publisher.

The book is 10 in. by 12½ in. in size, bound in heavy paper. (The illustration herewith reproduces in miniature, in black and white, the colored cover.) It has 24 pages, with 18 illustrations in color and 31 half-tone reproductions of photographs. (The representative character of the pictures is indicated by the fact that acknowledgment is made to no less than 37 individuals and railroads and other companies.)

The interior workings of the railroad are introduced in the text by telling what has to be done to prepare a train before the conductor is ready to say "All Aboard!" at the initial terminal. The work of important employees is described, as is the preparation of food and sleeping arrangements on trains. The young reader secures in a few simple words an understanding of "what makes the wheels go 'round." Modern improvements in equipment, speed and safety are outlined and engineering and maintenance methods as well. One wonders whether so much has ever been told about railroads in so few words.



"Fan" interest in railroads, thanks to this book, can now begin to thrive at its natural source—the children. But many adults, too, in railroad work, faced with the problem common to all, of how to make railroading interesting to the outside public, will find this book of great value to them. Colonel Henry for text and Otto Kuhler for pictures make an ideal combination for this type of work (so much of which still needs to be done).

Reinforced Concrete Lining Used to Advantage in Old Tunnel

Twelve-inch section, reinforced by rods and six-inch H-beam sets, replaces old timber without encroaching on clearances and without costly enlarging work

CONFRONTED with the problem of installing a concrete lining within an old timber-faced, single-track tunnel on the Central region of the Pennsylvania where restricted clearances prohibited any encroachment within the existing timber line, the road adopted the unusual expedient of a relatively thin concrete lining reinforced with H-beams and rods. Through this type of construction, which precluded the enlarging of the bore that would have been necessary under the circumstances if a mass concrete lining had been installed, it was not only possible to maintain existing clearances, but it was not even necessary to disturb the old timber side wall and arch lagging. No difficulty was encountered in placing and holding the reinforcing steel in proper position during concreting, and the cost of the work was considerably less than would have been occasioned by installing a mass-type lining, with the setting back of all of the timbers which this type of lining would have made necessary.

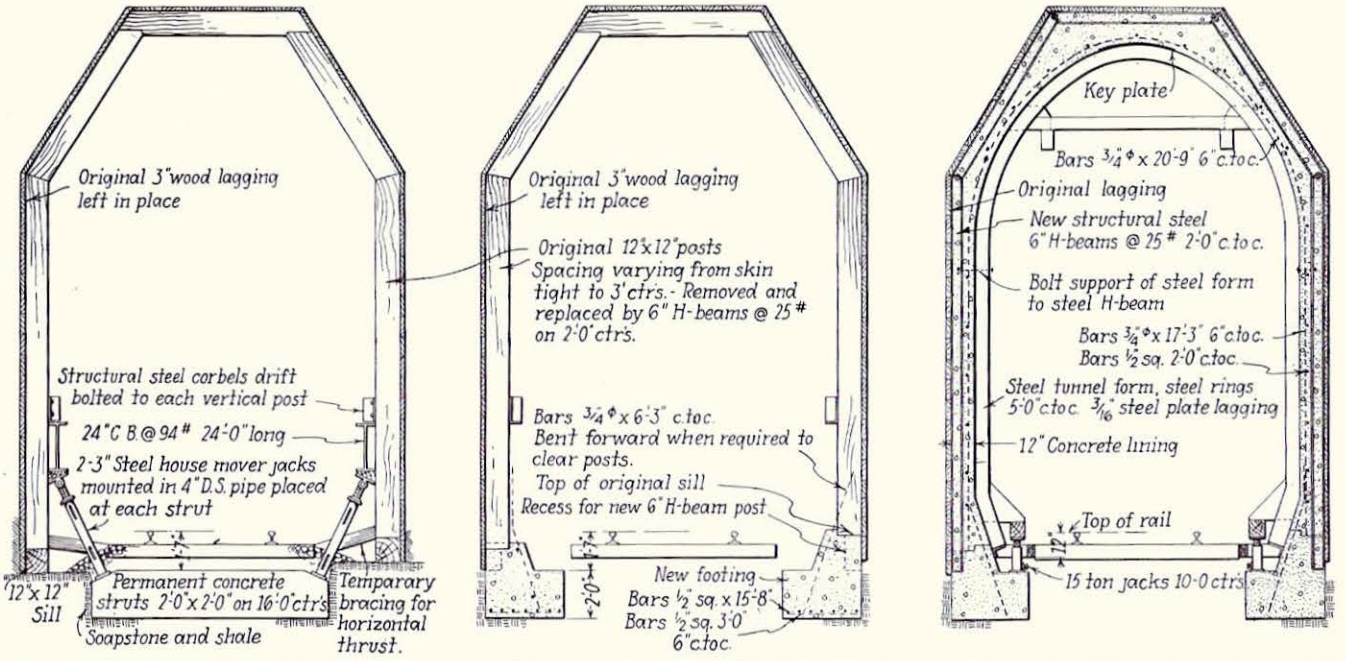
Maintenance Heavy on Old Timber Lining

The tunnel involved in the work, which is known as the Stone Creek tunnel, is located on the Marietta branch of the Cleveland division. This tunnel, which was built in 1874, is 753 ft. long, and was lined with timber, except for a section of concrete lining 128 ft. long directly back of its north portal which was constructed in 1902. This old section of concrete lining afforded adequate clearance and was in good condition, but the timber lining was a constant source of maintenance expense.

The timber lining was made up almost uniformly of timber sets with a three-segment top, spaced up to four foot centers, and backed solidly with 2-in. oak lagging. The largest timbers in the old lining were 12 in. by 12 in., including bottom sills, which were braced against side pressures in certain unstable sections of the tunnel by means of timber struts beneath the track.

The track within the tunnel was ballasted with cinders. There was no pipe drainage within the tunnel, except through the 128-ft. concrete-lined section at the north end, but since the tunnel is relatively short and on a uniform grade of 1.2 per cent, no particular problem was occasioned by wet track. However, in the relining work, tile drainage lines of 6-in. and 8-in. pipe were provided along each side, and, following completion of the overhead work, the track was completely reballasted with crushed slag.

The major items of work in this project included the construction of a 12-in. reinforced concrete lining throughout the old timbered section, the installation of 2-ft. by 2-ft. concrete struts between the footings of the new side walls at intervals of 16 ft., and the provision of new tile drainage lines within each of the new


Original 3"wood lagging left in place
Structural steel corbels drift bolted to each vertical post
24"C B @ 94# 24'-0" long
2-3" Steel house mover jacks mounted in 4" D.S. pipe placed at each strut
12"x 12" Sill
Permanent concrete struts 2'0"x 2'0" on 16'0" ctr's
Temporary bracing for horizontal thrust.
Soapstone and shale
Original 3"wood lagging left in place
Original 12"x 12" posts Spacing varying from skin tight to 3' ctrs. - Removed and replaced by 6" H-beams @ 25# on 2'0" ctrs.
Bars 3/4" ϕ x 6'-3" c.to.c.
Bent forward when required to clear posts.
Top of original sill
Recess for new 6" H-beam post
New footing
Bars 1/2" sq. x 15'-8"
Bars 1/2" sq. 3'0" 6" c.to.c.
Key plate
Bars 3/4" ϕ x 20'-9" 6" c.to.c.
Original lagging
New structural steel 6" H-beams @ 25# 2'0" c.to.c.
Bolt support of steel form to steel H-beam
Bars 3/4" ϕ x 17'-3" 6" c.to.c.
Bars 1/2" sq. 2'0" c.to.c.
Steel tunnel form, steel rings 5'0" c.to.c. 3/16" steel plate lagging
12" Concrete lining
Top of rail
15 ton jacks 10-0 ctrs

Step 1—Showing Details of Jacking Beam Arrangement Used to Permit Pouring of New Footings.

Step 2—The New Wall Footings in Place Beneath the Old Timber Sets.

Step 3—The New H-Beam Sets in Place, Timber Posts Removed, and Concrete Placed Behind Movable Form.

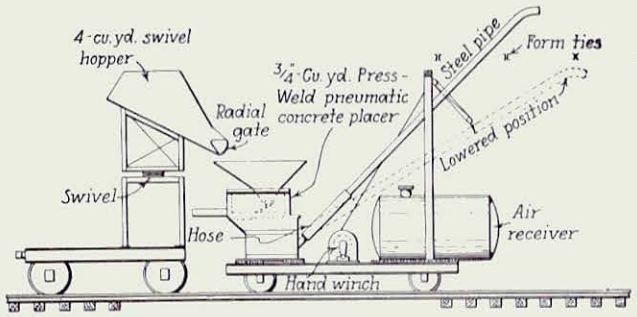
Sketches Showing Construction Steps in Replacing Old Timber Lining With a Reinforced Concrete Lining of the Same Thickness

wall footings, with pipe laterals extending into the track area at intervals. At the south end of the tunnel, the new drainage system was connected with a new 12-in. corrugated iron pipe line on the west side of the track.

The new lining, which at no point was allowed to extend inside the existing timber face, was reinforced with 6-in., 25-lb. H-beam sets, spaced 12 in. to 24 in. center to center, depending upon conditions, and with horizontal and vertical rods placed in the sides and arch, 3 in. back from the face. This location of the rods placed them approximately midway between the inner faces of the H-beams and the inside face of the lining. The vertical rods, ¾ in. in diameter, were placed on 6-in. centers, while the horizontal rods were ½-in. square bars placed on 24-in. centers.

Jacking Beams Support Old Lining

In the lining of the tunnel, a procedure was followed which at no time left any part of the roof unsupported, and which also did not disturb the old original timber lagging that formed a back form for the new concrete lining, and saved thousands of yards of concrete which would have been wasted otherwise in filling voids back to the natural tunnel face. The first step in the work, which was carried out progressively through the tunnel, was to excavate for and to pour the 2-ft. by 2-ft. horizontal concrete cross struts which were placed beneath the track on 16-ft. centers throughout the tunnel. This was done without special difficulty by excavating between spread ties with picks and hand shovels, and by pouring the concrete to form the individual struts from a concrete hopper mounted on a push car. A feature of these struts is that they were cast with their upper end corners beveled, to provide footings for jack supports of the old timber lining while its sills were being undermined in sections to construct the new wall foundations.



Sketch Showing Mounting of Concrete Delivery Hopper and Arrangement of Facilities on the Concrete Placer Car

Having constructed the struts, the next operation was to transfer the load of the old lining to these struts temporarily. This was done progressively through the tunnel, a panel of 16 ft. at a time, by first attaching a specially-built steel corbel to each side wall post on both sides of the tunnel, and by then transferring the load on all of these posts to adjacent concrete struts through the corbels and a 24-in., 94-lb. jacking beam, 24 ft. long, placed beneath them, which was supported by jacks resting on the beveled faces of the floor struts.

The corbels were merely a pair of 6-in. by 6-in. angles, 12 in. long, riveted together and provided with a steel base plate, which were secured to the posts by means of four double-headed drift bolts. The bolts used were 12 in. long and the double-head type was employed so that the bolts could be withdrawn readily for repeated used in moving the corbels ahead for subsequent settings of the jacking beams.

The jack units employed were built up of steel house movers' jacks 3-in. in diameter, each mounted in a section of 4-in. double-strength pipe of proper length for the specific setting of the corbels and the jacking beams. These units were placed on an angle of approximately 30 deg. from the vertical, and, when in position, lay entirely outside the minimum clearance lines required for train operation. The angularity between the bases of the jacking beams and the jack heads was taken care of by means of wooden wedge blocks.

In addition to the jacking arrangement for supporting the old timber lining while it was being undermined, temporary timber braces, placed practically horizontal, were used where necessary between the bottoms of the old wall posts and the ends of the track ties to resist any lateral thrust on the side wall which might develop. Throughout, the jacking and bracing on each side of the tunnel was balanced by that on the opposite side.

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After the new concrete footings and sills were formed, with all reinforcing and drain tiles in place, the corbels, beams and jacks were removed, transferring the loads on the old wall posts to the new footings. The jacking equipment was then moved ahead to the next section, and the operations were repeated, leaving behind only the horizontal bracing between the posts and track ties to insure against inward movement of the old timber side walls. In this manner, the foundations for the new concrete lining, enclosing the new tile drainage lines, were completed throughout the tunnel before any of the relining work proper was started.

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The rod and bar reinforcing in the lining was placed from the scaffold car when not in other service, and was securely wired together and clipped to the H-beams

to avoid any shifting of its position during the pouring of the concrete. For convenience in erecting the vertical reinforcing steel, splices developing the full strength of the bars themselves were made at about the spring lines of the arch.

All of the concrete used in the new lining was prepared at a central mixing plant located near the south portal, and was brought into the tunnel in a specially built four-yard elevated, swivel-mounted hopper, from which the side walls of the lining could be poured to a considerable height by gravity. Above this point the concrete was placed by means of an air-lock type pneumatic concrete placer mounted on a special four-wheel car. Air for the operation of the placer was furnished by a compressor located immediately outside the south end of the tunnel, which delivered the air to an air receiver tank mounted on the same car as the concrete placing unit. The concrete was delivered to the forms through a 6-in. pipe having a flexible hose connection to the placer, so that the discharge nozzle could be raised through the cross struts near the top of the forms and be made to discharge the concrete directly at the crown.

An electrically-operated concrete vibrator on a long flexible shaft was used continuously during placing operations to insure a dense concrete. The only difficulty encountered in the concreting work was to fill compactly the spaces about the H-beams over the top of the arch. To insure the filling of these spaces, an attempt was made to place grout pipes in the crown of the arch at intervals at the time the lining was being poured, through which grout could be pumped later into any voids that could be located. Difficulty in holding these pipes in place led to the abandoning of the plan of placing them while the lining was being poured. Instead, holes were drilled through the crown of the new lining immediately after the forms had been removed, and grout was forced through them to refusal.

All of the concrete used in the lining was prepared in accordance with the water-cement ratio. Cylinder tests showed that it tested uniformly in excess of 3,000 lb.

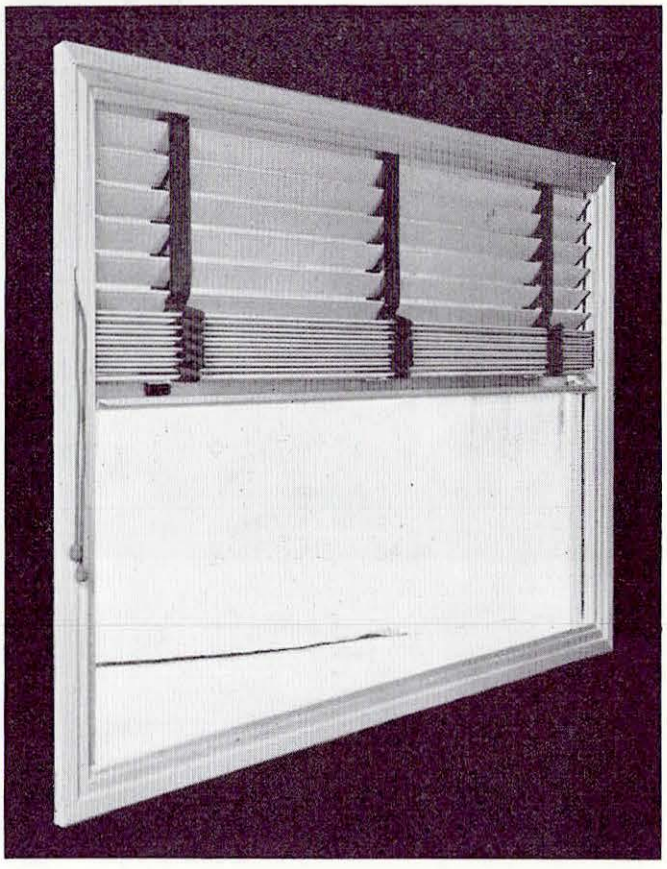
The reinforced concrete lining employed in the tunnel was designed and installed under the direction of J. F. Leonard, engineer of bridges and buildings of the Central region of the Pennsylvania, and W. D. Wiggins, at the time, chief engineer of the region, but now acting chief engineer of the Pennsylvania system. The work was done under contract by the John F. Casey Company, Pittsburgh, Pa., which company developed the jacking beam arrangement employed to permit pouring of the new wall footings.

Metlvane Blind for Passenger Cars

AN aluminum-slat blind, recently placed on the market by H. B. Dodge & Company, Chicago, is designed especially for use in railway passenger cars. It is similar in principle to the popular Venetian blind successfully used in homes and offices. It is attractive in appearance and noise-proof in construction.

Doubtless the most important feature of the Metlvane Blind, as it is called, is its control of light. By shutting out direct rays, it eliminates shadows and contrasts and distributes a soft, uniform light throughout the entire car. With the slats tilted at the proper angle, a passenger may sit with complete comfort in any seat and enjoy a relatively unobstructed view outside. Likewise the blind provides complete privacy without shutting off the exterior view.

Beauty is merged with utility in the blind design. The horizontal aluminum slats preserve a streamline effect on both the interior and exterior of the car. Satin-finish aluminum frames can be readily made an important element of the interior decorative treatment. Though distinctly modern in appearance, the blind fits well into any scheme of decoration.



Metlvane Aluminum-Slat Blind Developed for Use in Railway Passenger Cars

Mechanically, the Metlvane Blind is a single unit built into a solid frame of extruded aluminum, which may be easily removed and replaced. All mechanism is concealed, and there are no apertures of any kind in the slats (as in the ordinary Venetian blind) to admit sun rays. The slats are constructed of an aluminum or stainless-steel covering over a thin strip of wood, which eliminates metallic ring. The slat ends are insulated with cast rubber capping to prevent rattle and vibration. Even when the slats are tightly closed and set together, no noise from them is detectable in a train moving at any speed.

Two types of the blind are now being developed, each of which may be easily operated without effort or inconvenience. The first of these, not illustrated, is operated by means of two small, revolving, disk-type handles built into the top fascia. One of the handles regulates the tilt of the slat, while the other controls the raising and lowering of the entire blind. A generous ratio of mechanical advantage assures easy operation in a minimum of time.

In the second type, shown in the illustration, raising and lowering of the slats in the side grooves is accomplished by means of a counterbalanced, self-locking bot-

(*Continued on page 248*)

Steel Racks at Oneonta

Upper—In the Oneonta Store
Lower—In the Store at Colonie

Sturdy Buildings and Steel Equipment for D. & H. Stores

Sound construction aids supply work during depression—Printing plant and machinery for metal ties feature operations

By F. J. McGuinness

Superintendent of Stores, Delaware & Hudson, Watervliet, N. Y.

STORES facilities on the Delaware & Hudson, which comprises 849 miles of lines, consist of four division stores and nine local stores. The bulk of the material, however, is located at two points: the car items at Oneonta, N. Y., where most of the car work is performed, and the locomotive material at Colonie stores (Watervliet, N. Y.), where the general locomotive repair shop is located. Signal and motor car parts are distributed from Green Island, N. Y., where the signal repair shop is located.

Repairs to open-top and passenger cars are centralized at Oneonta, as are the mounting of all car wheels, the milling of lumber for all equipment, the repair of brake beams, the reclamation and preparation of journal-box packing, the forming of driving-box grease cakes, and the cleaning and lubrication of triple valves.

In 1927, co-incident with the re-arrangement of facilities at Oneonta involving the conversion of a locomotive back shop into a car shop and the consolidation of locomotive work at the roundhouse, the car stores were improved. The car material, which was housed in scattered locations, was concentrated, for the most part, in a new storehouse located adjacent to the main car shop. This resulted in the abandonment of eight smaller and widely separated wooden structures.

The new car store is a building 60 ft. wide and 100 ft. long, constructed of concrete, steel and brick, with wood-block flooring. It is equipped throughout with adjustable, all-metal shelving. The outside storage is a wood-block platform of 5,710 sq. ft. bordering the storehouse. These facilities are served by two tracks having a capacity of eight cars. In a partitioned space in the building is a shop for the reclamation of lamps and tinware for the system. Examples of such reclamation

are the conversion of surplus switch lamps into marker lamps and the conversion of metal drums into containers for handling and storing material.

The lumber yard exemplifies the benefits of adequate handling facilities and the advantageous placement of stock, the present arrangement affording a progressive movement of this material to the wood mill. An overhead craneway, 350 ft. long with a 58-ft. span, traveled by a five-ton crane, meets the handling requirements of the yard. Adjacent to the lumber-storage yard is a dry-kiln and storage building for lumber, 45 ft. by 125 ft., constructed of brick, with a kiln capacity of 66,000 ft. and and a shed capacity of 100,000 ft. The kiln has two compartments for the indirect high-pressure steam drying of freight car sheathing, lining, coach and cabinet lumber and building lumber.

In 1927, a locomotive storehouse, 60 ft. wide and 153 ft. long, was built next to the new locomotive-repair shop. This eliminated five material locations at this point. The building is a one-story structure of concrete, steel and brick, with a 40-ft. by 40-ft. basement and a 121-ft. platform for four cars along one side. The floor is concrete. In the basement are oil storage tanks having a total capacity of 27,600 gal. Adjustable, all-metal shelving has been installed throughout the building.

The general locomotive-repair shops and the principal storehouse are at Colonie, about five miles north of Albany. A three-story brick storehouse, 60 ft. by 160 ft., with a basement, accommodates the stores, a printing plant, and offices of the superintendent of stores, division storekeeper, shop superintendent, and master mechanic. The storehouse building is served on two sides by tracks with a total capacity of 13 cars. The material yard is equipped with a 10-ton, 100-ft. span, overhead traveling crane, operating with a magnet. The length of the craneway is 900 ft. Adjacent to the roundhouse is a brick and concrete oilhouse. The lumber yard is equipped with a 5-ton overhead traveling crane with a 100-ft. span, operating on a 420-ft. craneway. This yard is now devoted chiefly to bridge and building lumber.

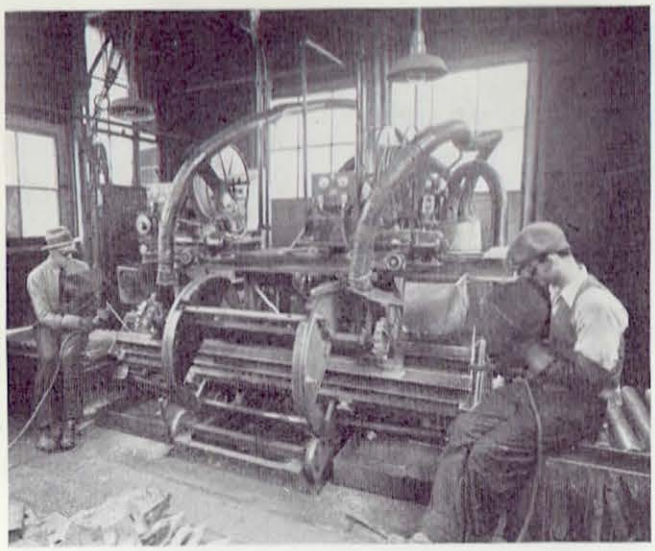
All scrap is shipped to this point, except wheels, car axles, journal bearings, turnings, and a small percentage of uncut structural material and bolsters which are handled at Oneonta. Bins have a total capacity of 29,250 cu. ft. and radiate from a circular sorting table with a 20-ft. radius, built 6 ft. above grade on concrete foundations. Beyond the scrap dock is ground space for uncut scrap, boilers, bolsters and similar material. The force comprises a foreman in charge of both scrap and reclamation, one craneman, five scrap sorters, one of whom is assigned to the handling of non-ferrous scrap. It also includes one cutting-torch operator and one laborer. The equipment consists of an overhead traveling crane of 10-ton capacity operating a magnet 55½-in. in diameter with 2,000-lb. capacity, also a cutting shear. The crane has a span of 100 ft. and operates on a 900-ft. runway. It has a track on each side under the craneway. The quantity of scrap handled at this dock during 1935 was in excess of 14,000 tons.

Make 121,000 Steel Ties

Close to the scrap dock and served by the same crane is a specially equipped plant for the construction of steel crossties. The ties are made from two pieces of scrap rail, each 8 ft. long, two ordinary scrap angle-bars or angle irons, and two new tie plates punched for 90-lb. rail. The pieces are fastened together by automatically welding the plates to the ball of the rails along the edges (which are in contact) at the same time that the angle members are being applied by hand electrodes to the bases and webs at each end of the rails. The angle irons provide a vertical bearing surface against the ballast for resisting lateral displacement of the tie. The rail fastening formerly used consisted of a clamp and a spring steel key. These are being supplanted by a combination one-piece spring clamp.

The equipment consists of a special welding machine with a fixture for holding and clamping the two pieces of rail and the two tie plates, as well as the end angles. This is equipped with jigs and dowels to space and hold the ties and plates during welding, while a footbar permits rocking each side under the nozzles of the automatic welding head. The clamping mechanism is pneumatically operated, and the travel carriages and welding heads move backwards and forwards on a track over the joint to be welded. A 1,500-amp., 60-volt, a.c. motor-generator supplies welding current, and the air is kept relatively clarified for the benefit of the welders by means

Typical Views of D & H. Stores



Making Steel Ties from Old Rail

of a blower attached to a 7½ hp., 1,200 r.p.m., 40-cycle motor.

Scrap rail for the ties is cut by torch into proper lengths outside the tie plant and conveyed by gravity rollers throught the building wall and under the welding machine. As each tie is completed, it continues on the same conveyor through an opening in the opposite wall and thence to the loading track where a 1,000-lb. electric crane hoists it into shipping position in an open-top car.

The complete working time on each tie averages 4 min. and 40 sec. with 80-lb. rail and 5 min. and 14 sec. with 90-lb. rail. To January 1, 1936, a total of 121,000 of these ties were manufactured and installed in yard tracks and passing tracks.

Print Bulk of Stationery

Company printing is a stores department activity conducted by a complete staff of compositors, pressmen, feeders and cutters, totaling 15 men, superintended by a practical printer who formerly operated his own establishment. Forms and other printed matter are produced at a saving of 22 per cent over commercial prices, and appreciable savings in paper stock costs have been accomplished by standardizing sizes, weights and kinds of paper.

In the Printing Plant of the D. & H.

Occupying 5,000 sq. ft. of floor space on the top floor of the storehouse building, the printing department produces approximately 80 per cent of the forms used on the railroad; also an employees' monthly bulletin of 16 pages, two semi-monthly bulletins for employees, one of which is printed in Italian, and miscellaneous matter. About 64 tons of paper and bristols of various sizes, colors and weights are used yearly, representing about 1,660,000 sheets of paper of an average size of 22 in. by 34 in. This stock, when printed and cut to required sizes, amounts to approximately 17,565,000 sheets. Most of the forms are padded, about 10,450,000 sheets being made up in this way, averaging 100 sheets a pad. All obsolete forms are made into scratch pads, while old records are cut up and sold as waste paper.

Jobs are sent to the printing department accompanied by a standard order form. Accurate cost accounting records are kept of each job, including a record of material used as well as of labor involved. These cost figures are used to make proper charges against departments ordering the work and are also available for comparison with prices charged by outside concerns.

The machines include one 33-in. by 46-in. cylinder press, one 17-in. by 22-in. automatic press, one 8½-in. by 14-in. automatic press, one 14-in. by 22-in. press, one 38-in. paper-cutting machine, one folding machine, two wire-stitching machines, one combination perforating and punching machine, and one linotype typesetting machine.

Steel type setting equipment, which was introduced on the Delaware & Hudson before its advantages were generally recognized elsewhere, includes four type cabinets, one proof reader's desk, one cut cabinet, one galley cabinet with brass bank, one galley rack, one sorting cabinet with brass bank, two composing stones, one ink vault, three roller cabinets, two make-ready tables, one stock table, two chase racks, one padding table and six bindery tables. Ordinary mechanical failures of any of the printing equipment can be readily remedied and broken parts duplicated by utilizing the mechanics in the locomotive shops.

Mimeograph, hectograph, addressograph, blueprint, photostat and photograph jobs and similar reproduction work of a non-printed nature are performed in the general office building at Albany by the reproduction department under the direct jurisdiction of the office of the vice president and general manager.

Metlvane Blind for Passenger Cars

(*Continued from page 245*)

tom bar. By grasping the bottom bar, a passenger may readily raise or lower the blind to locked positions when up or down, which are really the only two correct positions to give maximum efficiency. The tilting device in this type consists of two small cords projecting from the side of the frame, at the fingertips of the passenger. Both types are of a simple, practical design which keeps original and upkeep cost at a minimum.

In cars, fitted with the customary type of window shades, the pocket of heated air present between the window pane and the drawn shade serves as a heat reservoir, detrimental to the comfort of passengers, even in air-conditioned cars, since this air cannot escape and be mixed with the treated air. The small spaces between slats in the new blind eliminate this closed pocket.

Sec. 77 Full of Imperfections*

Philosophy of federal dictation of reorganizations seen as threat to continued private operation

By Robert T. Swaine

Part I

BY March 1, 1936, a total of nearly 75,000 miles of railroad properties, owned or operated by approximately 140 different corporations, were in the hands of the courts. Recently the recuperative powers of American business have asserted themselves. The great vacuum created by five years of curtailed buying, together with the liberal pump-priming activities of the national government, have caused an increasing stream of goods again to flow in volume over our railroads. Increases have been recorded in railway operating revenues, and although increased expenses, largely the result of mandatory legislation, have prevented the carrying through of proportional amounts to net railway operating income, hope has been stirred that early financial reorganizations of the properties may be accomplished.

Does Present Law Threaten Nationalization?

What is the character of the legal machinery available for the accomplishment of such reorganization? What sort of capital structures are likely to result? Will the reorganized properties continue operation as successful ventures under private ownership and operation, or will reorganization constitute but a step toward nationalization of our entire transportation system?

May I draw attention to a trend in the legal, political and economic philosophies applied to reorganization problems, which indicates the ultimate answer to this third question? Commencing in 1933 the legal technique of railroad reorganization radically changed. Prior to that year reorganizations which could not be accomplished voluntarily and without receivership (and no really complicated reorganization could be so accomplished) were the result of so-called "consent receiverships" and mortgage foreclosures in the federal courts of equity. This method of reorganization was severely criticized, not alone by the large security holders and banking interests whose financial investments in railroad properties tended then to give them a dominating position in reorganizations, but also by the so-called "liberals" who have dominated recent federal legislation on the subject of railroad reorganization.

Why Security Holders Sought Change in Law

The former group criticized the equity procedure primarily on three grounds: First, because the jurisdiction of the federal courts of equity is co-ordinate with that of state courts, and a state court receivership, if commenced first, took precedence over a subsequent attempt to create a federal receivership; a railroad threatened with financial difficulties was constantly under the risk of being broken up into as many separate parts as there were states in which its properties lay. This defect in legal procedure was frequently sought to be availed of by members of the bar whose primary objective was not the protection of the interests of the property but the realization of a substantial fee to themselves by reason of their capacity to embarrass the property.

Secondly, even if a federal receivership were first accomplished, a somewhat similar embarrassment arose out of the fact that under the federal judicial code the jurisdiction of any United States district court was confined to the circuit in which the property lay. As a result there was always a serious risk that in the case of property lying in different circuits, different receivers might be appointed in the different circuits, resulting in embarrassment of administration. Substantial scandals arose out of this situation during the railroad receiverships of the '80s and '90s.

Thirdly, under the old procedure the ultimate objective of the receivership, as a matter of legal principle, had to be a sale of the property. Where, as in the case of most railroads, the property was covered by many different liens on various portions of the property, difficult legal and practical questions arose in connection with the sales. Cash had to be provided for the distributive share of the proceeds of sale attributable to all non-assenting security holders, however large the percentage of assenters might be. The determination of a proper "upset" price was a question over which the theorists waged many battles in the legal periodicals. In last analysis, however, the whole philosophy of the sale of a great railroad property at public auction was essentially fictitous, at least so far as the rights of minorities were concerned. As a practical matter the minority of any class of creditors was powerless to purchase the property from the majority, for of course the purchaser at the conventional foreclosure or receivership sale always paid the purchase price by turning in the majority-held securities.

What the "Liberals" Did Not Like

The criticism of the consent receivership by the so-called "liberal" group was that it was collusive. As a railroad company in financial difficulties could not in form sue itself and bring about a receivership, it arranged with a creditor to bring a suit in a federal court of equity, and in the suit so brought the railroad company, by pre-arrangement, appeared, admitted the allegations of the complaint, and joined in the prayer for the appointment of a receiver. Usually one of the principal officers of the defendant company was made one of the receivers. The so-called "liberals" felt that there was something abhorrent in this situation and that litigation which was adversary in form should be adversary in fact.

Their eye, too, was upon the possibility of suits against the old management for mismanagement, which they seemed to feel must *ipso facto* exist in the case of any railroad which fell into financial difficulty. This criticism persisted, and was from time to time furthered by sympathetic utterances even from justices of the United States Supreme Court, notwithstanding that the Supreme Court itself had sustained this form of procedure.

It was to meet these criticisms that as early as 1931 the then Solicitor General Thacher began the preparation of a bill to provide machinery for corporate reorganiza-

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publicity for the trip, but practically every New York paper carried a considerable item concerning it. Even the Associated Press had a dispatch concerning the event. It appeared in the rotogravure of one paper the following Sunday. That publicity certainly did not hurt the Lackawanna, in the least!

It would prove of considerable benefit to the railroads if they would recognize, solicit and encourage the "fan" interest. Each fan has friends, and a certain amount of interest, and the best part of it is—from the railroad standpoint—the railroad booster is willing to pay out his own good money to the carrier he is boosting, and securing publicity for. Fans fall in several classes, from the railroad historians, model builders and serious students of railroad history and development, down through those who merely like to take photos of locomotives and trains, to the vast inarticulate group which climbs on every locomotive and train exhibited, buys magazines such as Railroad Stories or *Railway Age*, and more or less guiltily admits—when cornered—a secret, and possibly frustrated, love for the railroad.

Inspection trips would bring out hundreds and hundreds of such persons, and make them active railroad supporters—while paying for the privilege! One word of warning, however, to the railroad executive who promotes such a trip. First get in touch with a responsible fan organization, and discuss the entire operation with its officers, for unless the details of the trip are worked out to appeal to the fan and the public, the trip will not prove a success, and may do more harm than good.

To illustrate, for several years I have handled the details of the trips made by members of the New York Chapter of the Railway & Locomotive Historical Society. It has been my experience that the operating officials are only too glad to co-operate in every way possible, but being on the other side of the fence, they do not know the fan or public mind, and cannot realize just how to, or what will, capture their fancy. We have laid out the program, in each instance, and worked out details with the operating departments of the railroads concerned, which has resulted in highly popular and successful inspection trips.

Any legitimate "fan" organization would be only too glad to help in every way possible to make such trips a success, if the railroads will only recognize their interest and knowledge of the subject, and call on them. At the present time, at least, such expeditions have a decided publicity value, which should not be overlooked.

The combination of lower fares, increased and improved service, more men at work, public interest and "fan" support, should go a long way to bring the railroads out of the red, and wipe out past deficits.

In closing, as one of many thousand railroad boosters and "fans," I say to the railroads that we are ready to help, aid and assist them to secure favorable publicity and win back traffic lost to competitors, if they want us to.

THOMAS T. TABER.

This Country's First Diesel-Electric Locomotive

NEW YORK

TO THE EDITOR:

The photograph with this letter shows the first passenger train operated in this country on a trial trip, drawn by a Diesel-electric locomotive. According to the Ingersoll-Rand Company, the Central Railroad Company of New Jersey was the first to order a Diesel-electric locomotive in this country. The electrical apparatus on the locomotive was manufactured by the General Electric Company and the locomotive was rebuilt from one of the gasoline engine type. It was designed for switching service and was purchased in October, 1925, the cost of renewals and repairs since that time being practically de minimis.

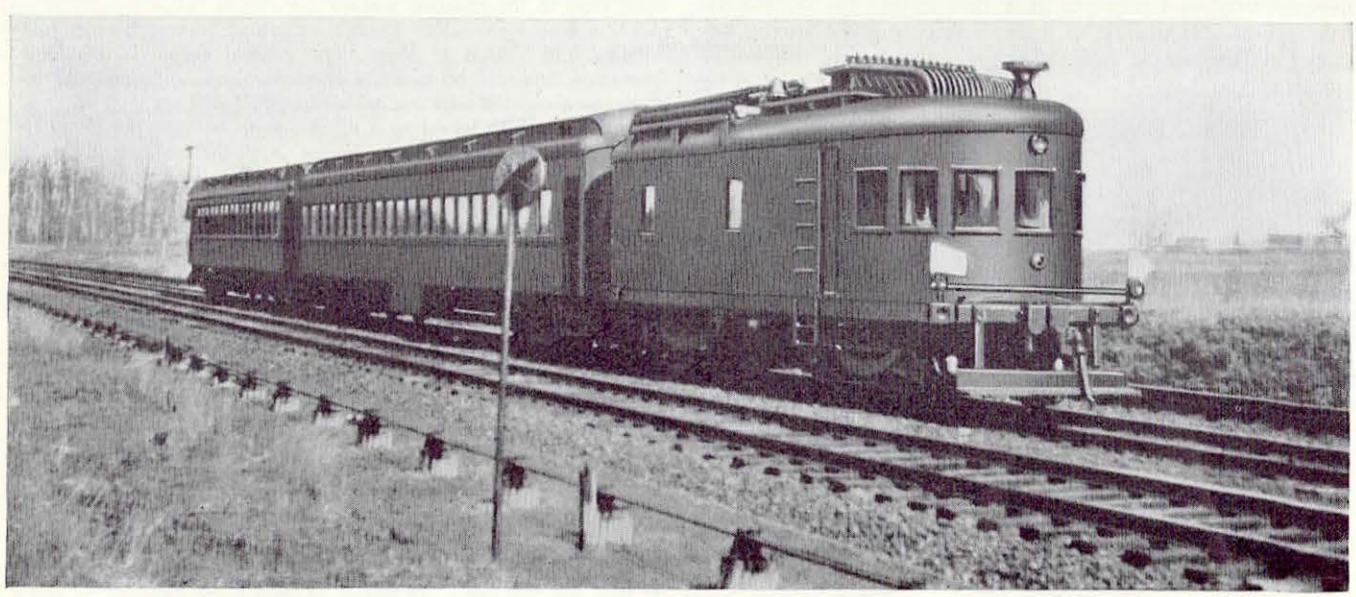
Going back a little further into railroad history, it may be of interest, that insofar as there is any evidence to the contrary, I was the first railroad officer to make use of the gasoline engine for rail car use. True, it was a handcar, but nevertheless, it was the first of its kind. In 1892 I was superintendent of the St. Louis division of the Chicago, Burlington & Quincy. Gasoline engines had but recently come into existence and I had the pattern made in our shop for the cylinder of a small gasoline engine, which was cast by the Buda Manufacturing Company at Buda, Ill. The ignition was secured by a very small pipe, plugged at one end, and screwed into the head of the cylinder. This pipe was heated to a cherry red by an ordinary blow type torch. As the piston reached the top of the cylinder it tripped the latch of a cap, which allowed the compressed gas in the cylinder to flow into the red hot pipe, thus exploding the charge. It was crude, but it served its purpose.

We placed this engine on a handcar, substituting it for the levers. The connection between the engine shaft and the axle of the handcar was accomplished through sprocket wheels and a chain. This proved a failure, the sprocket chain breaking. We then substituted a belt and pulleys. This worked satisfactorily on level track, but the car could not negotiate a grade. It occurred to me that "speed was power" with a gasoline engine and that this could be accomplished by placing a loose pulley on the shaft of the car axle, with a lever arrangement to shift the belt part way off of the fixed pulley on the axle and onto the loose pulley, whereby the engine would continue at full speed, while allowing the belt to slip; this arrangement accomplished its purpose. I used this gasoline handcar for bridge inspection and other service.

Of course, gasoline-driven engines made rapid progress in many directions, but so far as I know, this home-made device was the first gasoline-propelled rail car.

W. G. BESLER,

Chairman of Board, Central Railroad of New Jersey.



Sixty-Ton Diesel-Electric Locomotive on C. R. R. of N. J. Between Jersey City, N. J., and Harrisburg, Pa.

Sec. 77 Full of Imperfections*

Philosophy of federal dictation of reorganizations seen as threat to continued private operation

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Part I

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tions under the federal bankruptcy power. In 1932, at the suggestion of the Reconstruction Finance Corporation, a separate bill was drafted to provide such machinery for railroad reorganization. This bill was introduced by Senator Hastings in June of 1932 and was the origin of the present Section 77 of the Federal Bankruptcy Act.

It contemplated that the debtor itself might initiate a proceeding for its reorganization in the proper federal district court (thus avoiding the fictitious and collusive receivership), that the court in which the proceeding was initiated should have exclusive jurisdiction of the debtor's property throughout the United States, whether or not a previous receivership suit had been commenced in state or federal courts (thus eliminating the possibility of multiplicity of receiverships), and that a reorganization plan consented to by two-thirds of each class of affected security holders and judicially declared to be fair should bind all security holders (thus eliminating the fictitious sale).

Reasoning of the Framers of the New Law

Those who prepared the first draft of the Hastings bill approached the problem of reorganization in the belief that the railroad industry is fundamentally to be supported by private capital and to be operated by private management, subject to such regulation by governmental agencies as may be appropriate to protect the public interest in the maintenance of efficient rail transportation. Their approach to the immediate problems of reorganization was that, in first instance, the character of a financial reorganization of a bankrupt railroad is the concern of the holders of the securities affected. It was believed that a fair adjustment of the rights of the several classes of security holders *inter se* could best be attained by bargaining and litigation between the security holders themselves. To borrow a term from traditional bankruptcy practice, the process was considered to be essentially one of "composition," and the aim was to furnish to the security holders effective legal machinery to work out for themselves a fair "composition."

It was expected that the bargaining to reach such a "composition" would be "collective bargaining," a right which has been vigorously asserted and insured for another group in the railroad world. This collective bargaining, it was contemplated, would be conducted by representatives of the several classes of security holders (committees) in the formation of which the large security holders would have a voice commensurate with their interest. To insure fairness to all classes of security holders it was the belief that a plan thus worked out should not be binding upon any classes which did not in preponderant numbers assent thereto. It was further the belief that it was a necessary part of the judicial function that the court invoked to consummate the reorganization should itself determine that the proposed bargain was fair to all classes of security holders. This, it seemed, constituted insurance both that the minority of any class of securities would not be unfairly dealt with by the assenting majority and that even as to non-assenting classes the proposal would be basically fair.

It was the view further that classes of securities of which a requisite proportion (suggested as two-thirds) did not assent should have the right to take, in the alternative, either the securities allotted to them in the reorganized going concern under the plan thus found by the court to be fair, or the cash liquidation value of their interest in the defunct enterprise, determined either by a sale of the property or in some other manner approved by the court.

The relative rights of the several classes of securities and their relative treatment under a plan of reorganization seemed primarily to involve the determination of private rights between private litigants, and both as a matter of legal principle and as a matter of effective procedure, that determination seemed to involve essentially judicial functions properly to be confined to the courts.

The original Hastings bill, however, recognized that every railroad reorganization involves an over-riding public interest, quite apart from the private interests concerned. Public interest (not at all inconsistently with private interest but independently of private interest) requires a capitalization of the reorganized venture which, taken as a whole and apart from its division between the several private interests concerned, is sound in that it will not unduly burden the operation with excessive fixed charges or unduly cramp necessary capital expenditures by failure to provide adequately for future financing. To safeguard this public interest, the original draft contemplated regulation by the Interstate Commerce Commission of those elements of the reorganization affecting the public, as contrasted with private, interest.

Enter the "Liberals" and a New Theory

But there were those in Congress, in the Interstate Commerce Commission, and particularly in the councils of the then incoming Roosevelt administration who approached the problem with an entirely different philosophy. Their philosophy was that a railroad reorganization is not predominantly the affair of the security holders themselves; that, while the security holders might be entitled to be consulted and heard in the working out of a reorganization plan, the formulation and consummation of a plan is primarily a public administrative function—a process not merely to be regulated by governmental authorities but one in which those authorities should have powers both of initiative and of dominating control, and in which the judicial process, though perhaps a necessary constitutional evil, should be reduced to a minimum.

Thus, one school of thought held the view that a railroad reorganization is primarily a matter of private litigation and bargaining within a judicial proceeding, subject to governmental regulation only on matters affecting the public, as contrasted with private, rights, while the other school of thought regarded railroad reorganization as a matter for governmental administrative initiative and control, subject only to such veto by the courts as may be required to prevent the invasion of constitutional rights of the security holders.

The resultant act, signed on the last day of the Hoover administration, was a hopeless hodgepodge of both theories but with the theory of governmental control predominant. No reorganization of any railroad followed. On the contrary, large railroad systems, as we have seen, continued to topple into bankruptcy. That Section 77 was procedurally defective was, of course, not the reason. The real reason was that during 1933 and 1934 gross incomes continued to decline more rapidly than expenses, much mileage not even earning ordinary operating expenses, and a great majority of the mileage failing by a substantial margin to earn fixed charges.

Failure of Original Section 77 Incorrectly Blamed on Security Owners

But by a federal administration whose entire philosophy was the regimentation of business under federal bureaus this real reason for the failure of Section 77 to bring about reorganizations was not generally recognized or admitted. It was said that Section 77 had failed to produce reorganizations because of the degree of initiative and control which that act had left to the security holders. It was charged that there was some conflict of interest between the scattered small holders of securi-

ties and the large security holders which made impossible the representation of the former by committees initiated or dominated by the latter. It was urged that if the Interstate Commerce Commission were given additional powers of initiation and control and if the power even of veto by majority action were taken away from security holders, reorganizations could be more speedily effected. Accordingly, in 1935 Section 77 was radically revised.

Act Now Government Control, Not Regulatory, Measure

I would not be thought to suggest that the Hastings Bill of 1933 was perfect or that all of the amendments made in 1933 or even those made in 1935 were unwise. There are many subjects even in the litigation of wholly private questions in which the courts might well be given the assistance of expert administrative bodies. In railroad matters such assistance can obviously best be furnished by the Interstate Commerce Commission. So far, therefore, as the Railroad Reorganization Act has been amended to provide the courts with the assistance of the Interstate Commerce Commission as an expert upon questions of fact, those amendments have been constructive and wise. Many of the 1935 amendments also were helpful clarifications of the original act in the light of more mature thought on the subject.

But the primary purpose of the 1935 amendments was to accentuate governmental control of private property rights, as contrasted with regulation in the public interest, to disrupt existing management, to discourage organization of security holders, either in working out a reorganization plan or in resisting what they might regard as unfair action on the part of the Commission, and to wipe out entirely any right of any number of security holders, however large, to prevent the consummation of a plan believed by them to be unfair to their respective private interests or to receive the cash value of those interests.

Under Section 77 as it now stands the procedure for reorganization is a hopeless maze of red tape, with the security holders being passed back and forth between the court and the Commission, with interminable delay and inordinate expense, and having little effective voice in the reorganization of what they thought, when they purchased their securities, was their own property in the relative rank of the priorities of their securities. The plan upon which security holders are permitted a vote, which on the face of the statute is somewhat meaningless, need not be a plan which the security holders themselves devise and for which they can seek the support of other security holders in open debate through circularization of the security holders themselves, but may be a plan written by the Interstate Commerce Commission, and the manner of its submission to the security holders is largely under the Commission's control.

Managerial Wickedness Taken for Granted

The philosophy that insolvency *prima facie* imports some moral turpitude on the part of the management finds expression in the 1935 amendments forbidding the earlier practice of leaving the debtor and its management in possession, making mandatory the appointment of trustees, requiring that if any member of the former management is a trustee there shall also be outside trustees, irrespective of whether there is the faintest suggestion of any previous impropriety in the management, and making mandatory also an affirmative investigation by the trustees to determine whether there are any possible bases for the institution of suits against the former management.

Of course, if any substantial and responsible security holders bring charges of waste or fraud against the management of an insolvent railroad and there is any *prima facie* evidence that such charges have foundation, neither the debtor nor any of its officers should be permitted to continue in absolute control of the property and there should be a trusteeship of which at least one member should be wholly independent of the previous management. But the whole implication of the approach to the problem in the 1935 amendments is one of presupposing guilt and cannot but adversely affect the morale of railroad managements.

Under the old reorganization procedure, and under Section 77 as originally enacted, it was the practice in substantially all reorganizations that security holders should be represented in the receivership proceedings and in the formulation of a reorganization plan by committees. These committees were frequently initiated by the bankers who had originally sold the securities to the public, for once banking was rightly regarded as an honorable profession and public opinion supported recognition by the issuing banker of an obligation to assist in the protection of a security which he had sold to the public and which had become adversely affected by subsequent financial trouble. In the case of railroads these security holders' committees were usually made up of the representatives of the largest security holders, usually predominantly insurance companies, savings banks and trust companies.

During the last two years the committee system has been a particular target for attack by governmental bodies. No less than four separate investigations of protective committees are being conducted at the present time by various committees of Congress and federal commissions. In the course of these hearings men of standing in the community have been subjected to much undeserved criticism and, as witnesses before these investigating bodies, to wholly baseless innuendos of lack of fidelity to fiduciary obligations. Particularly have these criticisms rested upon an alleged disqualification for committee membership of officers of institutions which hold more than one issue of the securities of the insolvent debtor.

Largest Security Owners Barred from Participation

The large life insurance companies, fire insurance companies, savings banks and trust companies are the principal holders of the mortgage bonds of our railroads, and very rarely does any one of the institutional holders confine its interest in the securities of a particular railroad to those of a single issue. If, as seems to be the thought of those in Congress and in the Securities and Exchange Commission who have expressed views on the matter, ownership of two issues of securities of an insolvent debtor disqualifies the representative of the owner from acting upon a committee for either of the securities, the result will be that bondholders' committees cannot be made up from representatives of the large security holders who have had experience in the problems involved in any reorganization and who have substantial interests at stake, but can be made up only of inexperienced small holders. Such committees obviously can never be effective in the protection of their securities for they cannot command the support of the large majority of those securities.

The practical result of the recent criticism of security-holders' committees has been that very few such general committees representing particular issues have been organized in the reorganization proceedings commenced within the last two years. Instead, there has been developed a new type of committee, wholly institutional in character, representing all the bonds of all issues of the debtor held by the institutions represented on the committee. Such committees accept no responsibility for

any particular issue or for the securities held by the general public. As a result, particularly since under the practice of the last decade corporate trustees under railroad mortgages have not been charged by those mortgages with the performance of substantial active duties, the scattered bondholders have been left with little if any protection of the interests of their particular issues.

That there have been abuses in the practices of protective committees in the past is undoubtedly true, and security holders, commissions and courts should seek to obviate those abuses. But the extent of such abuses has been greatly exaggerated and it is certainly open to question whether legislation which discourages the formation of protective committees, or which vests approval of the personnel of protective committees in federal administrative bureaus, will not leave the security holders generally much worse off than they have been heretofore, even conceding all the charges which have been made against protective committees. Some of the legislation recently proposed in Congress contemplates even censorship by some federal administrative body of all communications by committees to their security holders. So long, however, as we have a Constitution guaranteeing the right of free assemblage and free speech, and so long as we have a Supreme Court with power to make that Constitution effective, it seems doubtful that any such legislation, even if enacted, can be put into force.

Part of Act Seen Unconstitutional

Much has heretofore been written about the necessity for the protection of minorities in railroad reorganizations. Certain of the 1935 amendments to Section 77 in form leave majorities without protection if, as I doubt to be the fact, those amendments have any validity under the Constitution. They purport to give the Interstate Commerce Commission and the courts power to force a reorganization plan upon all classes of security holders irrespective of the unanimous dissent of any class or classes. I believe that the decision of the United States Supreme Court in respect of Frazier-Lemke Act affecting the adjustment of farm mortgages clearly indicate the invalidity of this provision. In any event, it is doubtful that even the Interstate Commerce Commission, let alone any court, would ever attempt to exercise the arbitrary authority which the Act purports to create, as against the dissent of any large majority of any important class of securities.

To our first question, therefore, the answer would seem to be that the machinery provided by the Federal Reorganization Act for the accomplishment of railroad reorganizations is cumbersome, is not calculated to give adequate opportunity for expression by security holders themselves, and is characterized by the purported creation of absolute affirmative authority in the Interstate Commerce Commission and the courts which is of doubtful validity and which probably would never be exercised. This is bound to result in further substantial delay in the consummation of reorganizations, even where the earnings situation permits reorganization.

Dissatisfaction among large security holders and their counsel has resulted in the suggestion in some quarters that the whole machinery of Section 77 should be scrapped and that railroad reorganizations should not be effected under the bankruptcy power of the federal government, but should be returned to the old equity procedure. Such action, I believe, would be most unwise, for while some of the defects of the old equity procedure could have been rectified by legislation without abandoning the equity forum, the federal bankruptcy power alone furnishes the basis for exclusive federal jurisdiction and for binding all members of an assenting class of securities to the reorganization plan. Furthermore, even under the old equity procedure, the Interstate Commerce Commission asserted to itself broad jurisdiction over reorganizations, often without justification under the Interstate Commerce Act itself, and sometimes without warrant under the federal Constitution. The difficulty with railroad reorganization procedure today is not to be found in nice lawyers' distinctions between equity and bankruptcy but in the prevalent philosophy that in such reorganizations a federal adminstrative bureau shall have complete control.

[Part II, concluding this article, will appear in an early issue.]

Labor Costs Per Unit of Traffic

WASHINGTON, D. C.

THE Interstate Commerce Commission has made public a study by its Bureau of Statistics of railroad labor cost per unit of traffic in which the general conclusion is reached that both the labor expense per ton-mile and the revenue per ton-mile were less in 1935 than in 1926 but the labor expense was greater and the revenue very much less per passenger-mile in 1935 than in 1926. Comparing 1935 with 1913 the conclusion is reached that the labor cost per unit of traffic was substantially greater in 1935. The bureau's statement omitting the accompanying detailed tables, follows:

"This Bureau is frequently called upon to answer the question of what has been the trend of the 'labor cost per ton-mile.' The question is not capable of a precise answer because railways produce passenger and other services as well as freight service and many of the employees are not employed exclusively in any one service. It is the purpose of the present statement to review various averages obtainable from current statistics that throw light on the trend of railway labor cost not only per ton-mile but for other units of railway service also. Such costs per unit of railway service are different from the wage cost per day or hour, concerning which information is found in current publications of this Bureau. The change in labor cost per unit of railway service is the combined result of changes in hourly wage rates, productivity of labor and capital, and economy of management.

"The average costs which have been computed are given in Table I. In Table II are given index numbers based on them showing changes from 1926 levels taken as 100, and in Table III index numbers are given with the 1913 levels taken as 100 for such averages as are available for the years from 1913 to date.

"In interpreting the figures since 1931 it should be considered that a wage cut of 10 per cent became effective February 1, 1932. This was eliminated in successive stages as follows: 2½ of the 10 per cent was restored on July 1, 1934, 2½ on January 1, 1935, and 5 per cent on April 1, 1935.

"According to Table II, the freight payroll expense per revenue ton-mile in 1935 was 87 per cent of that of 1926. The car-mile payroll expense for freight, passenger, and all other services taken together in 1935 was 82 per cent of that of 1926. If the empty car-miles are excluded, this average becomes 84. If gross ton-miles are substituted for car-miles, the average payroll expense per gross ton-mile, excluding empty car tons, for 1935 is shown to be 81 per cent of the cor-

responding 1926 average for all services. Considerably different averages are obtained by dividing the total payroll of all services by the so-called 'traffic units.' The index varies from 91 per cent to 93 per cent of the 1926 average according to the weight given to passenger miles in the total traffic units, which are composed of ton-miles and passenger-miles. The explanation of the higher payroll cost for the traffic units than for car-miles is that the effect of the diminished number of passengers in the average passenger car and changes in the average load per freight car are reflected in the traffic unit average but not in the car-mile average.

"Ton-mile and passenger-mile indexes of unit labor expense are also given in the tables for groups of accounts which can be definitely divided between the two services. The following comparisons are from Table II:

Item	Per cent which the 1935 average is of the 1926 average
Road freight labor expense per revenue ton-mile:	
(a) Based on freight proportion of accounts 392, 393, and 401	91
(b) Based on compensation of road freight employees in monthly wage reports	89
Road passenger labor expense per passenger-mile:	
(a) Based on passenger proportion of accounts 392, 393, and 401	128
(b) Based on compensation of road passenger employees in monthly wage reports	127
Expense for freight station employees per ton of freight handled	93
Expense for freight yard employees per ton of freight handled	103
Expense for passenger station employees per passenger carried	115
Expense for passenger yard employees per passenger carried	130

The fact that the passenger indexes above given are higher than the freight indexes is explained by the greater traffic decline in the passenger than in the freight business without a corresponding reduction in the station and train service maintained for passengers.

"Although this paper deals primarily with unit expenses, there have also been included in the tables averages and percentages for certain freight and passenger unit revenues for convenient comparison. The average ton-mile revenue for 1935 was 91 per cent and the passenger-mile revenue 66 per cent of the average for 1926. The ton-mile revenue does not accurately reflect changes in the level of rates, being affected by a loss of short haul traffic and other influences.

"Generally, one may conclude from Table II that both the labor expense per ton-mile and the revenue per ton-mile were less in 1935 than in 1926, but the labor expense was greater and the revenue very much less per passenger-mile in 1935 than in 1926.

"In Table III, the year ended June 30, 1913, is taken as the base year for a smaller number of averages. All of the averages given in Table II cannot be carried back to 1913. Per car-mile for all services, loaded and empty, the labor expense was 32 per cent greater in 1935 than in 1913. If empty freight cars are excluded, the per cent of increase rises to 45. In explanation of the difference it may be noted that the percentage of empty freight car-miles was substantially greater in 1935 than in 1913. On a traffic unit basis, the increase in labor expense was 36, 41, or 46 per cent according to the construction of the traffic units total, as previously explained. Over so long a period as 22 years, the change in the size of cars and in the length of haul affect the significance of such comparisons. The average freight car capacity was 38 tons on June 30, 1913, and 48 tons on December 31, 1934. The average haul was 260 miles in 1913 and 337 miles in 1934. The revenue per ton-mile in 1935 was 38 per cent greater than in 1913. Per ton originated, the freight revenue was 82 per cent greater, reflecting the increased haul as well as rate changes. The revenue per passenger-mile was 3 per cent less.

"One may conclude from Table III that the labor cost per unit of traffic was substantially greater in 1935 than in 1913. This is also true of the freight revenue per ton-mile but not of the passenger revenue per passenger-mile which, taking the low western and southern and the higher eastern levels together, average a little less at the end than at the beginning of the 22 year period.

"In these comments, reference has been made to the base years and the year 1935. The percentages for the intervening years shown in the tables are of interest as showing the great increase in the average labor expense per unit of traffic from 1913 to 1920 and the almost uninterrupted decline since that time."

Analysis of Damage Claims on Perishables

WASHINGTON, D. C.

THE Bureau of Statistics of the Interstate Commerce Commission has issued a compilation of loss and damage claims and payments concerning fresh fruits and fresh vegetables, based on returns in Statistical Series Circular No. 21 issued February 29, 1936. The inquiry was confined to carload traffic.

Question 1 called for the number of claims, the amount claimed, the amount paid, both in total and per claim. The average amount paid per claim varies from $1.43 to $103.54 and the ratio of the amount paid to the amount claimed varies from 7.18 per cent to 100 per cent. The highest ratios are generally for roads with relatively few claims to pay, but there is a large variation also among the leading railways. A summary of answers to Question 1 in total by districts and individually for roads which settled 1,000 or more claims during the year is given below:

Number and Amount of Claims for Fresh Fruits and Vegetables Calendar Year, 1935, Class I Steam Railways

	Claims settled by respondent					Ratio of amount paid to amount claimed per cent
				Average per claim		
District and railway	Number	Amount claimed	Amount paid	Claimed	Paid	
Eastern district	152,371	$3,996,047	$2,482,818	$26.23	$16.29	62.13
Southern district	20,698	1,085,618	546,390	52.45	26.40	50.33
Western district	77,629	4,553,999	2,275,186	58.66	29.31	49.96
All districts	250,698	9,635,664	5,304,394	38.44	21.16	55.05
Selected railways						
Eastern district:						
Baltimore & Ohio	7,751	241,030	143,077	31.10	18.46	59.36
Boston & Maine	11,399	199,160	187,464	17.46	16.44	94.13
Chicago & Eastern Illinois	1,133	56,051	32,277	49.47	28.49	57.59
Erie System	18,539	409,968	219,283	22.11	11.83	53.49
New York Central (including Boston & Albany)	13,775	501,526	312,566	36.41	22.69	62.32
New York, Chicago & St. Louis	7,692	177,374	116,417	23.06	15.13	65.63
New York, New Haven & Hartford (including N. Y. Connecting)	18,559	483,050	425,453	26.02	22.92	88.08
Pennsylvania	53,897	1,330,231	691,646	24.68	12.83	52.00
Pere Marquette	4,446	92,238	50,585	20.75	11.38	54.84
Wabash	11,343	404,094	240,435	35.62	21.20	59.50
Southern district:						
Atlantic Coast Line	1,044	44,218	25,042	42.35	23.98	56.63
Chesapeake & Ohio	1,932	99,571	59,885	51.54	31.00	60.14
Illinois Central	10,252	619,475	299,383	60.42	29.20	48.33
Louisville & Nashville	1,094	32,315	18,358	29.54	16.78	56.81
Southern Ry. System	3,363	76,555	53,908	22.76	16.02	70.42

Western district:						
Alton	1,355	25,036	15,558	18.48	11.48	62.14
Chicago & North Western (including Chicago, St. Paul, Minneapolis & Omaha)	5,512	138,346	98,335	25.10	17.84	71.08
Chicago, Burlington & Quincy	3,403	86,177	54,331	25.32	15.97	63.05
Chicago, Milwaukee, St. Paul & Pacific	3,950	82,476	52,200	20.88	13.22	63.29
Denver & Rio Grande Western	1,063	98,255	52,117	92.43	49.03	53.04
Great Northern	3,272	172,107	106,752	52.60	32.63	62.03
Missouri Pacific	3,908	152,501	89,261	39.02	22.84	58.53
New Orleans, Texas & Mexico	1,398	163,295	60,757	116.81	43.46	37.21
Northern Pacific	2,432	190,474	83,976	78.32	34.53	44.09
Rock Island System	4,071	129,896	79,914	31.91	19.63	61.52
Santa Fe System	9,155	349,197	165,487	38.14	18.07	47.39
Southern Pacific-Pacific Lines	23,282	1,977,553	929,998	84.93	39.94	47.03
Texas & New Orleans	1,201	109,699	44,354	91.34	36.93	40.43
Union Pacific System	5,344	277,889	175,904	52.00	32.92	63.30
Western Pacific	2,501	363,861	132,797	145.49	53.10	36.50

The following summary gives for each of the four groups of commodities, information similar to that shown for total fresh fruits and fresh vegetables:

Commodity group	Amount paid		Ratio of amount paid to amount claimed
	Total	Per claim	(Per cent)
Fresh fruits except citrus	$1,390,283	$22.39	56.75
Fresh fruits, citrus	525,252	10.42	72.34
Melons	743,310	24.91	56.28
Fresh vegetables (including potatoes)	2,645,549	24.41	51.48
Total	$5,304,394	$21.16	55.05

Thus the amount paid to shippers of fresh vegetables is about the same as that paid to shippers of fresh fruits and melons combined. The ratio of the amount paid to amount claimed is highest for citrus fruits.

Question 2 required an analysis of claims as between local and interline carload traffic. Loss and damage claims on shipments of fresh fruits and vegetables are concerned principally with interline traffic. Of the total amount reported as paid under the head of "Settled by respondents," which was $5,303,788, $1,949,742 or 36.76 per cent was borne by the settling carrier and $3,354,046 or 63.24 per cent was charged to others. Local traffic involved payments of only $239,806.

Question 3 called for the amount of loss and damage claim payments with the freight revenue derived from the shipments. On these four groups of perishable traffic taken together, the loss and damage claims borne by steam railways were 2.72 per cent of the revenues. The corresponding percentages for each group were:

Commodity group	All districts	Eastern district	Southern district	Western district
	(Per cents)			
Fresh fruits except citrus	2.58	3.91	1.77	2.32
Fresh fruits, citrus	1.15	2.28	1.45	.85
Melons	6.57	7.03	10.73	4.15
Fresh vegetables	3.17	3.72	2.50	3.09

The replies to question 3 show a wide variation among roads in the per cent which loss and damage payments are of revenues.

For all carload traffic other than fruits and vegetables, loss and damage payments were less than one-half of one per cent of the freight revenue.

Question 4 relates to the expense of various railways in maintaining their freight claim departments, including the cost of investigation, clerical force, overhead, superintendence, and other expenses assignable to such departments. For 1935 the total expense was $4,391,710 for handling 2,180,121 claims, an average of $2.01 per claim. The corresponding average in each district was about the same. As the total claim expense involves apportionment of items of expense common to claim work and other activities of the railway, it is questionable whether the averages for individual railways are strictly comparable.

The expense of various carriers of maintaining inspection service for fresh fruits and fresh vegetables was called for in comparison with the number of carloads of such traffic handled. A few carriers gave the number of carloads inspected instead of the number originated and received from connections. The total expense for inspection was $1,272,838 for the year 1935 in connection with 2,420,669 carloads handled in the sense of the sum of those originated and those received from connections, the average expense being 53 cents a car. For the carriers reporting on a car inspected basis, the average was $1.85 per car inspected. There is a wide variation among the districts in these averages.

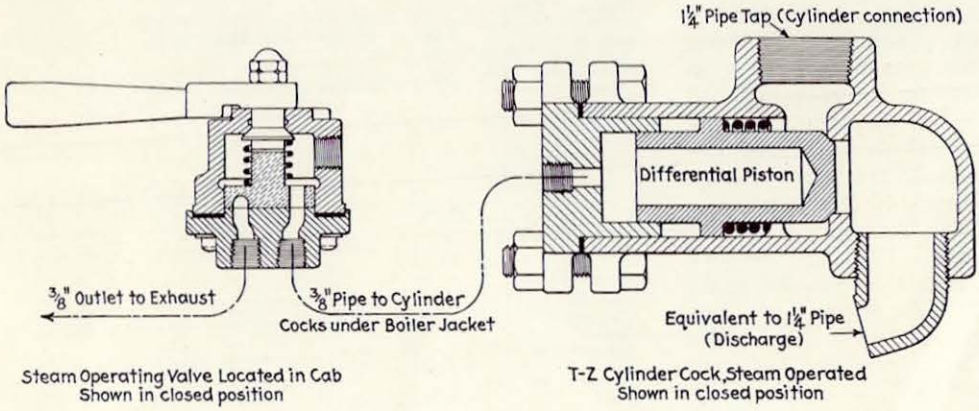
District	Expense of maintaining inspection service, year 1935	Number of carloads* of fresh fruits and fresh vegetables	Average inspection expense per carload
Eastern	$851,074	$813,622	$1.05
Southern	130,348	469,866	.28
Western	291,416	1,137,181	.26
All districts	1,272,838	2,420,669	.53

* Sum of originated and received from connections.

Steam Operated Cylinder Cock

A STEAM operated cylinder cock, designed with a view to more positive operation by the use of boiler pressure and quick relief for the locomotive cylinders by its extremely large opening, equivalent to the capacity of a 1¼-in. pipe, from the cylinders to the atmosphere, is being marketed by the T-Z Railway Equipment Company, Chicago.

This cylinder cock is held closed against cylinder pressure while the engine is working steam by boiler pressure on the differential piston in the cylinder cock, admitted through the cab operating valve. When this pressure is released through the open position of the


1¼" Pipe Tap (Cylinder connection)
Differential Piston
⅜" Outlet to Exhaust
⅜" Pipe to Cylinder Cocks under Boiler Jacket
Equivalent to 1¼" Pipe (Discharge)
Steam Operating Valve Located in Cab Shown in closed position
T-Z Cylinder Cock, Steam Operated Shown in closed position

Sectional Views of the T-Z Steam-Operated Cylinder Cock and Cab Operating Valve

cab operating valve the cylinder cocks are opened by the pressure of steam in the cylinder.

In the event of the engine priming the increased hydraulic pressure overcomes the boiler pressure on the differential piston and the cylinder cocks function as relief valves automatically preventing the build-up of excess hydraulic pressure and preventing damage to the cylinder heads, studs and reciprocating parts.

In the round house, with the engine under steam and the cab operating valve in customary open position, the cylinder cocks are opened automatically by the compression spring around the differential piston aided by any slight accumulation of cylinder pressure from a leaky main throttle, thus preventing accidental movement of the engine.

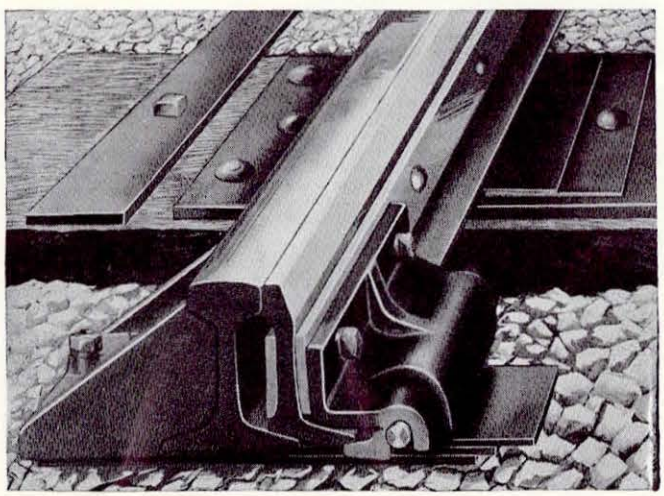
A slight circulation of live steam about the slip fit of the differential piston in the cylinder cock body prevents freezing. This steam cannot obscure the engineer's vision, however, as it enters the cylinder instead of exhausting to the atmosphere. The steam pipe from the cab operating valve to the cylinders is located under the boiler jacket.

Application of these cylinder cocks can be made in either single unit or in tandem as desired by the substitution of suitable connectors for the caps used in single-unit application.

Roller Bearings for Switches

THE recent trend toward the use of heavier track rails and longer switches requires more power for their operation. To reduce the load there has been introduced a simple, inexpensive anti-friction device which road tests show requires approximately 60 per cent less power for the operation of the switches than for those not so equipped. This device is being manufactured and sold by the Union Switch & Signal Company, Swissvale, Pa. This anti-friction device provides for the support of approximately 80 per cent of the weight of the switch on roller bearings, while in transit. However, when a train travels over a switch equipped with this anti-friction device, the switch is supported by tie plates in the usual manner.

The device is immune to the possibility of easy derangement and requires little care except for occasional lubrication. It utilizes a multi-leaf cantilever spring secured to the stock rail, which engages with the roller mounted in a bracket bolted to the switch rail. The spring is so proportioned as to provide a yielding support for practically the entire weight of the switch rails, which rest on the roller bearings.



The Anti-Friction Attachment Facilitates Movement of the Points and Reduces the Power Requirements

The use of roller bearings eliminates the necessity for frequent oiling of the switches. Placing practically the entire weight of the switch rails on the roller bearings results in uniform power requirements instead of varied power requirements, which are the result when grit and dirt accumulate on the switch plates. These power requirement variations are particularly noticeable where the lengths of switches have been increased to 45 ft., with a corresponding increase in the weight of the rail. The device has undergone actual road service for more than a year, during which period it has given entire satisfaction.

Communications . . .

"Open House" for Railroad Patrons

43 Hillcrest Road, Madison, New Jersey

To the Editor:

The recent celebration of Railroad Week by the western railroads was indeed a step toward making the public more railroad conscious. Aviation meets, automobile shows and races are so commonplace that they are hardly considered as news, but a field day, so as to speak, on our conservative railroads certainly brought out the crowds and the gentlemen of the press.

I have always wondered why the eastern lines have never followed up the idea of a railroad week, which has proven so successful in the west. Possibly they feel that such a celebration is beneath their dignity, or that the public would not react favorably to it. If the latter thought is the "fly in the ointment," why not try out a plan for showing the patrons and well wishers of the eastern lines what goes on behind the scenes? The cost would be negligible—and the publicity considerable. If it went over with a bang—as it surely would—make it an annual affair. If not, no harm would have been done.

The eastern roads, especially the so-called commuter lines, would do well to have an annual "Patrons' Day," preferably a Sunday, when the railroad would be "at home" to its patrons. Low rate excursions should be run to the shops and terminals, so that the patrons might know just how their railroad is operated. A warm welcome awaits the casual visitor at an airport, and guides always take parties through the huge Ford factory, so why not compromise and hold open house on certain advertised days in the railroad world?

There is a tremendous interest—more or less active—in railroading and how it is done. The general public is genuinely interested, and will be more so if encouraged. The railroad industry is about the only one which has well wishers who will pay their own fare to travel to a distant point to visit the shops of the carrier—in other words to see how the product that the railroad has for sale is made.

The New York Central ran a very successful inspection trip of its yards and shops in the vicinity of Albany, New York. Although snow and sleet must have discouraged some potential customers, about four hundred odd cash customers made the trip, walking through snow and slush to their ankles—and liking it! It took three dining cars to handle the hungry mob. Did the trip pay? Just ask the Central!

Recently the New York Chapter of the Railway & Locomotive Historical Society ran a special train to visit the Scranton shops and yards of the Lackawanna. Although the trip was restricted to members of the Society and their friends—no advertising being done—one hundred thirty-seven persons paid their fare to visit the shops, and kept the crew of the dining car busy all day. The party learned much about railroad operation, the railroad learned something about the intelligence and interest of the "fan," and incidentally took in close to $700 in total revenue! If that trip had been advertised, at least three hundred or more would have appeared, to pay cash to visit the shops. There was little attempt by the Society, and none by the railroad, to secure

publicity for the trip, but practically every New York paper carried a considerable item concerning it. Even the Associated Press had a dispatch concerning the event. It appeared in the rotogravure of one paper the following Sunday. That publicity certainly did not hurt the Lackawanna, in the least!

It would prove of considerable benefit to the railroads if they would recognize, solicit and encourage the "fan" interest. Each fan has friends, and a certain amount of interest, and the best part of it is—from the railroad standpoint—the railroad booster is willing to pay out his own good money to the carrier he is boosting, and securing publicity for. Fans fall in several classes, from the railroad historians, model builders and serious students of railroad history and development, down through those who merely like to take photos of locomotives and trains, to the vast inarticulate group which climbs on every locomotive and train exhibited, buys magazines such as Railroad Stories or *Railway Age*, and more or less guiltily admits—when cornered—a secret, and possibly frustrated, love for the railroad.

Inspection trips would bring out hundreds and hundreds of such persons, and make them active railroad supporters—while paying for the privilege! One word of warning, however, to the railroad executive who promotes such a trip. First get in touch with a responsible fan organization, and discuss the entire operation with its officers, for unless the details of the trip are worked out to appeal to the fan and the public, the trip will not prove a success, and may do more harm than good.

To illustrate, for several years I have handled the details of the trips made by members of the New York Chapter of the Railway & Locomotive Historical Society. It has been my experience that the operating officials are only too glad to co-operate in every way possible, but being on the other side of the fence, they do not know the fan or public mind, and cannot realize just how to, or what will, capture their fancy. We have laid out the program, in each instance, and worked out details with the operating departments of the railroads concerned, which has resulted in highly popular and successful inspection trips.

Any legitimate "fan" organization would be only too glad to help in every way possible to make such trips a success, if the railroads will only recognize their interest and knowledge of the subject, and call on them. At the present time, at least, such expeditions have a decided publicity value, which should not be overlooked.

The combination of lower fares, increased and improved service, more men at work, public interest and "fan" support, should go a long way to bring the railroads out of the red, and wipe out past deficits.

In closing, as one of many thousand railroad boosters and "fans," I say to the railroads that we are ready to help, aid and assist them to secure favorable publicity and win back traffic lost to competitors, if they want us to.

THOMAS T. TABER.

This Country's First Diesel-Electric Locomotive

NEW YORK

TO THE EDITOR:

The photograph with this letter shows the first passenger train operated in this country on a trial trip, drawn by a Diesel-electric locomotive. According to the Ingersoll-Rand Company, the Central Railroad Company of New Jersey was the first to order a Diesel-electric locomotive in this country. The electrical apparatus on the locomotive was manufactured by the General Electric Company and the locomotive was rebuilt from one of the gasoline engine type. It was designed for switching service and was purchased in October, 1925, the cost of renewals and repairs since that time being practically de minimis.

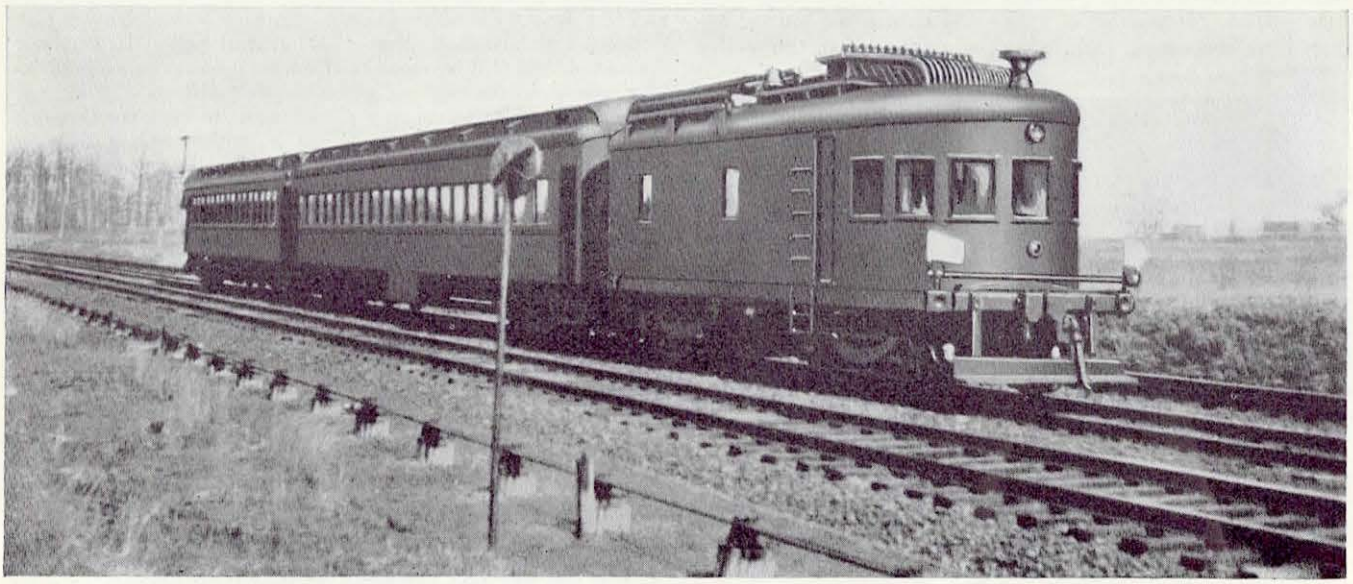
Going back a little further into railroad history, it may be of interest, that insofar as there is any evidence to the contrary, I was the first railroad officer to make use of the gasoline engine for rail car use. True, it was a handcar, but nevertheless, it was the first of its kind. In 1892 I was superintendent of the St. Louis division of the Chicago, Burlington & Quincy. Gasoline engines had but recently come into existence and I had the pattern made in our shop for the cylinder of a small gasoline engine, which was cast by the Buda Manufacturing Company at Buda, Ill. The ignition was secured by a very small pipe, plugged at one end, and screwed into the head of the cylinder. This pipe was heated to a cherry red by an ordinary blow type torch. As the piston reached the top of the cylinder it tripped the latch of a cap, which allowed the compressed gas in the cylinder to flow into the red hot pipe, thus exploding the charge. It was crude, but it served its purpose.

We placed this engine on a handcar, substituting it for the levers. The connection between the engine shaft and the axle of the handcar was accomplished through sprocket wheels and a chain. This proved a failure, the sprocket chain breaking. We then substituted a belt and pulleys. This worked satisfactorily on level track, but the car could not negotiate a grade. It occurred to me that "speed was power" with a gasoline engine and that this could be accomplished by placing a loose pulley on the shaft of the car axle, with a lever arrangement to shift the belt part way off of the fixed pulley on the axle and onto the loose pulley, whereby the engine would continue at full speed, while allowing the belt to slip; this arrangement accomplished its purpose. I used this gasoline handcar for bridge inspection and other service.

Of course, gasoline-driven engines made rapid progress in many directions, but so far as I know, this home-made device was the first gasoline-propelled rail car.

W. G. BESLER,

Chairman of Board, Central Railroad of New Jersey.



Sixty-Ton Diesel-Electric Locomotive on C. R. R. of N. J. Between Jersey City, N. J., and Harrisburg, Pa.

Odds and Ends . . .

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With the aid of all these organizations, Mr. Wheeler said, "we will now approach those who will sit in the next Congress in the hope that we can defeat the whole government ownership program, and once getting this question out of the way can concentrate upon a national transportation policy that shall be based upon continued private ownership of all transportation facilities."

Suggests Outline for Study Course in Rail Transport

An outline for a study course in railroad organization, operation and traffic has been prepared by the Committee on Education and Research of the Associated Traffic Clubs of America, and has been issued as the July number of The Trafficgram, official publication of this organization. The outline consists of references to reading matter, which are grouped under 16 different topics as follows: The Development of Railroad Transportation in the United States; Economic Principles of Transportation; Railroad Organization; The Permanent Way and Structures; Rolling Stock and Equipment; Line Operation; Yard and Terminal Operation; Railroad Freight Station Operation; Railroad Accounting; Solicitation and Traffic Development; Special Freight Services; Terminal Freight Services; Railroad Passenger Services; Railroad Rates and Rate Making; Railroad Traffic Associations and Railroads and the Public.

In explaining the purpose of the course, the Committee on Education and Research stated that "this outline of reading and study materials is not designed as a comprehensive program of intensive study for those who are already adequately trained railroad operating or traffic experts, but it is planned to be helpful for students of railroad transportation and traffic who wish to study the elementary principles of railroad organization, operation and traffic, as these principles are discussed by writers upon transportation subjects in texts or secondary sources."

Articulated Pullmans Ready for Service

The light-weight streamlined two-car articulated passenger unit, which the Pullman-Standard Car & Manufacturing Co. has had under construction for the Pullman Company, has now been completed and is soon to be placed in service in various regular trains throughout the country so that public reaction to the new features involved may be studied. This unit, which is designed for rear end operation, consists of a sleeping car containing 16 "duplex" bedrooms arranged in two levels and a combination sleeping and observation-lounge car.

It is expected that the cars will be placed in service within a week on either the Twentieth Century Limited of the New York Central or the Broadway Limited of the Pennsylvania, and, after a period of operation on both these trains, will be transferred to service on other railroads throughout the country. The cars, which are of alloy steel construction with interior trim of aluminum alloy, were described briefly in the *Railway Age* of April 20, 1935, page 606.

Transportation Association Makes Appointments

George M. Cook has been appointed vice-president in charge of press relations of the Educational division, Transportation Association of America, Inc., with headquarters at Chicago, according to an announcement by Donald D. Conn, executive vice-president of the association. Mr. Conn also announced the appointment of regional directors as follows: Curtis L. Mosher, Northwest chapter, Minneapolis, Minn.; Stanton Allen, Central Western chapter, Sioux City, Iowa; John B. Henkle, Southwest chapter, St. Louis, Mo.; Harold M. Yeilding, Midwest chapter, Chicago; and J. W. Mailler, New York State chapter, New York City.

Other changes in the association announced by Mr. Conn include the appointment of E. C. Krogh as acting secretary, with headquarters at Chicago, and the resignation of Walter Bockstahler, vice-president of the division of research. The functions of the latter division have been transferred to Mark M. Jones, vice-chairman of the Committee on Transportation Policy, with headquarters at New York.

Colorado Motor Vehicle License Act Held Constitutional

In a recent decision the Colorado state supreme court held that the state's 1935 motor vehicle common carrier license act was constitutional, thereby reversing a previous decision of District Judge James L. Cooper of Fremont county. The suit against the law, which attacked that por-

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NEWS

Railroads Repaying Loans Made by Government and R. C. C.

Loans made by the federal government and by the Railroad Credit Corporation, an organization set up by the railroads themselves to assist needy carriers, are being rapidly repaid by the railroads, according to a statement by J. J. Pelley, president of the Association of American Railroads. These repayments, so far made, amount to nearly $216,000,000.

Repayments by the railroads of loans made by the Reconstruction Finance Corporation have alone amounted to $155,292,399. Of that amount, $64,325,436 was repaid in the first seven months of this year, which was more than was repaid in any of the preceding four calendar years. With these repayments, railroad loans made by the Reconstruction Finance Corporation outstanding on August 1 amounted to $350,840,840.

Tabulations also show that the railroads have repaid part of the loans for new equipment, new rail and maintenance work made by the Public Works Administration to bring about unemployment relief. Railway loans made by that agency totaled $200,529,500, of which amount $23,643,000 has been repaid, leaving $176,886,500 outstanding. A considerable amount of those outstanding loans, however, was recently transferred by the Public Works Administration to the Reconstruction Finance Corporation, which, in turn, sold many of the securities represented by those loans to the investing public. As a result, of the total amount of such loans outstanding on August 1, this year, $91,741,000 had been sold by the Reconstruction Finance Corporation and were being held by the public. The Public Works Administration still held $9,101,000 and the Reconstruction Finance Corporation $76,044,500, which brought to $85,145,500 the amount of Public Works Administration railroad loans still held by government agencies.

The Railroad Credit Corporation, which was set up by the railroads themselves to aid weak roads in meeting fixed interest obligations, made loans amounting to $73,691,368, of which amount $36,922,582, or more than half, has been repaid, leaving $36,768,786 outstanding. As a result of the gradual repayment of these loans, the Railroad Credit Corporation, by a series of liquidating dividends, has been able to repay to participating carriers 53 per cent of the money derived from the increases in freight rates collected in the 15 months' period ended on March 31, 1933, and turned over to the corporation by the participating carriers as a fund from which loans to needy carriers were made.

Reconstruction Finance Corporation loans, amounting to $615,203,795 had been authorized up to July 31 but $6,968,156 had been canceled or withdrawn and only $506,133,239 had been actually disbursed. Loans had been authorized to 73 railroads, receivers and trustees, and repayments had been made by 50 of them, although many of the repayments were in small amounts. Some of the larger repayments included $15,600,000 by the New York Central, $18,200,000 by the New York, Chicago & St. Louis, $28,900,000 by the Pennsylvania, $18,672,250 by the St. Louis Southwestern, $22,000,000 by the Southern Pacific, $12,150,477 by the Baltimore & Ohio, $8,300,000 by the Cincinnati Union Terminal Company, and $6,000,000 by the Great Northern.

New York Intra-State Freight Rates

The Public Service Commission of New York has authorized the railroads to continue until the end of this year the emergency additions to freight rates which are now in effect; this order simply providing that the term of these temporary rates in the State of New York shall end on the same date as do the interstate rates.

Oklahoma Railway Not Exempt From Railway Labor Act

Division 3 of the Interstate Commerce Commission has issued a report, at the request of the National Mediation Board, finding that the Oklahoma Railway is more than a street, interurban, or suburban electric railway and therefore not within the terms of the exemption proviso in section 1 of the railway labor act.

New Haven Asks Modification of Train Control System

The trustees of the New York, New Haven & Hartford have asked the Interstate Commerce Commission to authorize a modification of the automatic train control system in use on its lines by removal from service of the brake-applying apparatus now in operation between Cedar Hill, Conn. (New Haven), and Springfield, Mass., and between New Haven and Cranston, R. I.

Pennsylvania Locomotive Shown to Large Crowds

The Pennsylvania's streamlined steam locomotive No. 3768 has now been in use experimentally on different divisions throughout the company's territory, and between times has been set aside for exhibition at 35 cities and towns. Over 300,000 persons have visited these exhibitions, and at numerous points the crowd was fully as large as could be accommodated in the hours assigned.

I.C.C. Warns Motor Carriers Against Undue Extension of Credit

It has come to the attention of the Interstate Commerce Commission, according to a notice issued to motor carriers, that many shippers or receivers of freight to whom credit in the settlement of tariff rates and charges has been extended by common carriers of property by motor vehicle are deliberately and purposely withholding payment of the tariff rates and charges for a length of time greater than that permitted by the commission's regulations governing the settlement of such rates and charges. In instances where this occurs the carriers to whom the transportation charges are due must discontinue, at once, it says, all credit arrangements with such shippers or receivers of freight and they must collect all tariff rates and charges before relinquishing possession at destination of all property transported by them in interstate or foreign commerce.

Any common carrier of property by motor vehicle who fails to collect tariff rates and charges strictly in accordance with the requirements of section 223 of the motor carrier act, 1935, and the commission's regulations issued to govern the settlement of such rates and charges, is subject to the penalties provided by section 222 of the motor carrier act.

Shippers and receivers of freight who deliberately withhold, beyond the credit period authorized by the commission's regulations payment of tariff rates and charges due for the transportation of property in interstate or foreign commerce, should be reminded, it says, that section 222 (c) of the motor carrier act provides in part that any shipper or consignee who shall accept or receive any concession or discrimination in violation of any provision of the motor carrier act, or who shall knowingly or wilfully by any such means or otherwise fraudulently seek to evade or defeat regulation as in this part provided for motor carriers, shall be deemed guilty of a misdemeanor and upon conviction be subject to the penalties provided by the act.

"Hiawatha" Patronage Continues at High Level

Travel on the "Hiawatha," high-speed streamlined steam train of the Chicago, Milwaukee, St. Paul & Pacific, operating between Chicago and the Twin Cities, is continuing at substantially higher levels than a year ago. During July this train carried 29,261 paying passengers, as compared with 20,237 during the corresponding period of last year, an increase of 45 per cent. This year the average number of passengers carried per day during July was 944, as compared with 653 in July,

1935. In June the Hiawatha carried 50 per cent more passengers than in the corresponding month of last year.

Between May 29, 1935, when the Hiawatha was placed in service, and July 31, of this year, this train carried 289,466 revenue passengers, an average of 673 daily.

Chicago Office of Motor Carrier Bureau Opened

The Bureau of Motor Carriers of the Interstate Commerce Commission announces the opening of an additional district office in the field on August 10, for District No. 8, in the Transportation building, Chicago, with District Director L. C. Loughry, in charge.

Railroad Employment Increased in July

Class I railroads reported to the Interstate Commerce Commission as of the middle of July a total of 1,084,836 employees, an increase of 6.52 per cent as compared with the number in July, 1935, and an increase of .74 per cent as compared with June The number in train and engine service increased 10.2 per cent over the number in the corresponding month of last year. With adjustment for seasonal variations the commission's Bureau of Statistics calculates that the July employment was 59.2 per cent of that for the period 1923-1925.

Co-Ordination of Transportation in New England Proposed

Preparation of a comprehensive transportation and communication plan, including a plan for a co-ordination of all forms of transportation in New England, is proposed by the New England Regional Planning Commission in a report to the National Resources Committee. A study of the available basic facts regarding New England highways and motor traffic has been prepared and a large amount of data regarding the highway situation is included in the report, together with a less complete discussion of the railroad, aviation, and water transportation facilities.

C. & N. W. Inaugurates Stewardess Service on "400"

On August 10 stewardess service was inaugurated on the "400," fast train of the Chicago & North Western operating between Chicago and the Twin Cities. For this service the railroad has chosen three young women from the ranks of its employees, all of whom were contestants in the beauty contest held by the railroads during Railroad Week.

The costumes of the stewardesses include French blue gabardine suits, overseas style hats, white shirtwaists, red ties and brown walking shoes. Their duties will be to assist mothers traveling with babies, passengers desiring to make connections and to lend aid in other ways to travelers both in coaches and in parlor cars.

I. C. C. Delays Determination of Municipal Trucking Zones

Division 5 of the Interstate Commerce Commission has issued an order staying the effect of the proposed report of an examiner recommending findings by the commission as to the area of Los Angeles, Calif., and of the zone adjacent to and commercially a part of the city district for the purpose of exemptions from the regulatory provisions of the motor carrier act. Similar reports had also been issued for New York, Chicago, and St. Louis.

Edward S. Brashears, general counsel for the American Trucking Associations, Inc., has filed with the Bureau of Motor Carriers a memorandum asking the commission to determine the scope of its control within municipalities before it attempts to prescribe exemption zones. He said it was believed "it was not the intention of Congress to eliminate any part of interstate commerce from the control of the commission, except in such commercial areas as overlap state lines and then only to leave free from control such interstate movement as is purely local in character."

Passenger Revenues Show Large Increase in July

An increase of 20.2 per cent in passenger revenues in July as compared with the figures for July, 1935, is shown for 26 of the 53 Class I railroads in the eastern district in a summary issued by the Interstate Commerce Commission on August 10 of estimates of operating revenues. The same roads showed an increase of 29.3 per cent in freight revenues. For the first five months of the year, before the fare reduction, the eastern roads had shown an increase of 10 per cent in passenger revenues. In the southern region 17 out of 28 railroads represented reported an increase of 29.6 per cent in passenger revenues and 24.1 per cent in freight revenues, while 29 out of 59 western roads showed an increase of 28.1 per cent for both freight and passenger revenues.

Public Relations Meeting

Railway public relations will be discussed at a joint meeting to be held at Detroit, Mich., on October 10 by organizations interested in that phase of railway activities. Participants will be the American Railway Development Association, the American Association of Railway Advertising Agents, the American Railway Magazine Editors Association, and public relations representatives of member roads of the Association of American Railroads. Each of the foregoing groups will hold separate meetings at Detroit on October 9, with the exception of the American Railway Development Association, which will hold a two-day meeting on October 8 and 9. The joint meeting will discuss the general railroad public relations situation and the organization of the Public Relations division of the A. A. R.

Maintenance Expenditures Increased in 1935

Class I railroads in 1935 spent $1,075,854,130 for maintenance work, according to a statement issued by J. J. Pelley, president of the Association of American Railroads. This was the greatest amount expended for maintenance purposes in any one year by the Class I railroads since 1931, according to complete reports for 1935 received by this association. Of the total amount of maintenance expenditures in 1935, $681,886,869 was used for the repair and other maintenance work of cars and locomotives owned by the railroads. This was an increase of $43,981,253 above such expenditures in 1934, and an increase of $83,177,741 above 1933. Expenditures for maintenance of way and structures totaled $393,967,261 in 1935, an increase of $28,667,646 above such expenditures in 1934, and an increase of $71,681,064 above 1933.

Telegraph and Telephone Section

The Telegraph and Telephone section of the Association of American Railroads is to hold its regular annual meeting at the Mayflower Hotel, Washington, D. C., on October 6, 7 and 8. In addition to the regular reports of 16 committees dealing with all departments of work in which the members are interested, there will be the following papers:

"Applications of Portable Carrier Telegraph Equipment" by a representative of the Western Union Telegraph Company.

"Carrier Telephone for Railroads" by a representative of the American Telephone & Telegraph Company.

"Practical Aspects of Recent Developments in the Field of Inductive Co-ordination" by a representative of the American Telephone & Telegraph Company.

"Simplified Duplex Equipment for Short Telegraph Lines" by a representative of the Western Union.

Increased Business at New York's Union Inland Station

New York's Union Inland Freight Station, located in the Port Authority Commerce building at 111 Eighth Avenue, reached its peak tonnage in July, according to a statement issued by the Port of New York Authority. A total of 23,873,074 lb. of l.c.l. freight passed over the station's platforms last month, an increase, the statement points out, of 763 per cent as compared with the 3,130,000 lb. handled in October, 1932, the first month that the station was in operation.

The station now has over 5,000 patrons and the Port Authority sees significance in the fact that the growth of traffic there has kept motor trucks away from Manhattan's congested waterfront, where railroad pier stations are located. The statement also notes an increased use of the station by industrial tenants located in the upper floors of the Commerce building.

"Speed-Endurance" Record Claimed for British Train

The London & North Eastern of Great Britain claims for its "Silver Jubilee" the "world's speed-endurance record for steam trains," according to a recent statement issued by the Associated British Railways, Inc., New York. The claim is based on the fact that the "Silver Jubilee" has recently completed 100,000 miles of high-speed operation in the period of nine months; it has averaged 67.1 m.p.h. on its regular run of 268 miles between Newcastle and London. An analysis of the train's record shows that it has, without loss of time attributable to the locomotive, run 100,000 miles at an average speed of

67.1 m.p.h.; 86,567 miles at 70.4 m.p.h.; and 18,283 miles at speeds "exceeding 80 m.p.h."

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R. B. A. Publishes Resolutions Opposing Government Ownership

A book containing photographic reproductions of 625 resolutions opposing government ownership and operation of railroads, which were adopted this year by national, regional, state and local business organizations, representing every state in the Union, has been published under the sponsorship of the Railway Business Association. In explaining the purpose of the book, Harry A. Wheeler, president of the Railway Business Association, pointed out that when the transportation conference presented a unanimous declaration opposing government ownership in Washington, it was told that the declaration "could not be accepted to represent more than the sentiment of the few individuals delegated to sit in the conference, and that no broad authoritative public sentiment had ever been expressed." "We therefore," he continued, "began a correspondence with these organizations, who represent many hundreds of thousands of business men" and their conclusions, bound into this volume, represent "an expression of nation-wide public sentiment that cannot be 'laughed off'."

With the aid of all these organizations, Mr. Wheeler said, "we will now approach those who will sit in the next Congress in the hope that we can defeat the whole government ownership program, and once getting this question out of the way can concentrate upon a national transportation policy that shall be based upon continued private ownership of all transportation facilities."

Suggests Outline for Study Course in Rail Transport

An outline for a study course in railroad organization, operation and traffic has been prepared by the Committee on Education and Research of the Associated Traffic Clubs of America, and has been issued as the July number of The Traffic-gram, official publication of this organization. The outline consists of references to reading matter, which are grouped under 16 different topics as follows: The Development of Railroad Transportation in the United States; Economic Principles of Transportation; Railroad Organization; The Permanent Way and Structures; Rolling Stock and Equipment; Line Operation; Yard and Terminal Operation; Railroad Freight Station Operation; Railroad Accounting; Solicitation and Traffic Development; Special Freight Services; Terminal Freight Services; Railroad Passenger Services; Railroad Rates and Rate Making; Railroad Traffic Associations and Railroads and the Public.

In explaining the purpose of the course, the Committee on Education and Research stated that "this outline of reading and study materials is not designed as a comprehensive program of intensive study for those who are already adequately trained railroad operating or traffic experts, but it is planned to be helpful for students of railroad transportation and traffic who wish to study the elementary principles of railroad organization, operation and traffic, as these principles are discussed by writers upon transportation subjects in texts or secondary sources."

Articulated Pullmans Ready for Service

The light-weight streamlined two-car articulated passenger unit, which the Pullman-Standard Car & Manufacturing Co. has had under construction for the Pullman Company, has now been completed and is soon to be placed in service in various regular trains throughout the country so that public reaction to the new features involved may be studied. This unit, which is designed for rear end operation, consists of a sleeping car containing 16 "duplex" bedrooms arranged in two levels and a combination sleeping and observation-lounge car.

It is expected that the cars will be placed in service within a week on either the Twentieth Century Limited of the New York Central or the Broadway Limited of the Pennsylvania, and, after a period of operation on both these trains, will be transferred to service on other railroads throughout the country. The cars, which are of alloy steel construction with interior trim of aluminum alloy, were described briefly in the *Railway Age* of April 20, 1935, page 606.

Transportation Association Makes Appointments

George M. Cook has been appointed vice-president in charge of press relations of the Educational division, Transportation Association of America, Inc., with headquarters at Chicago, according to an announcement by Donald D. Conn, executive vice-president of the association. Mr. Conn also announced the appointment of regional directors as follows: Curtis L. Mosher, Northwest chapter, Minneapolis, Minn.; Stanton Allen, Central Western chapter, Sioux City, Iowa; John B. Henkle, Southwest chapter, St. Louis, Mo.; Harold M. Yeilding, Midwest chapter, Chicago; and J. W. Mailler, New York State chapter, New York City.

Other changes in the association announced by Mr. Conn include the appointment of E. C. Krogh as acting secretary, with headquarters at Chicago, and the resignation of Walter Bockstahler, vice-president of the division of research. The functions of the latter division have been transferred to Mark M. Jones, vice-chairman of the Committee on Transportation Policy, with headquarters at New York.

Colorado Motor Vehicle License Act Held Constitutional

In a recent decision the Colorado state supreme court held that the state's 1935 motor vehicle common carrier license act was constitutional, thereby reversing a previous decision of District Judge James L. Cooper of Fremont county. The suit against the law, which attacked that por-

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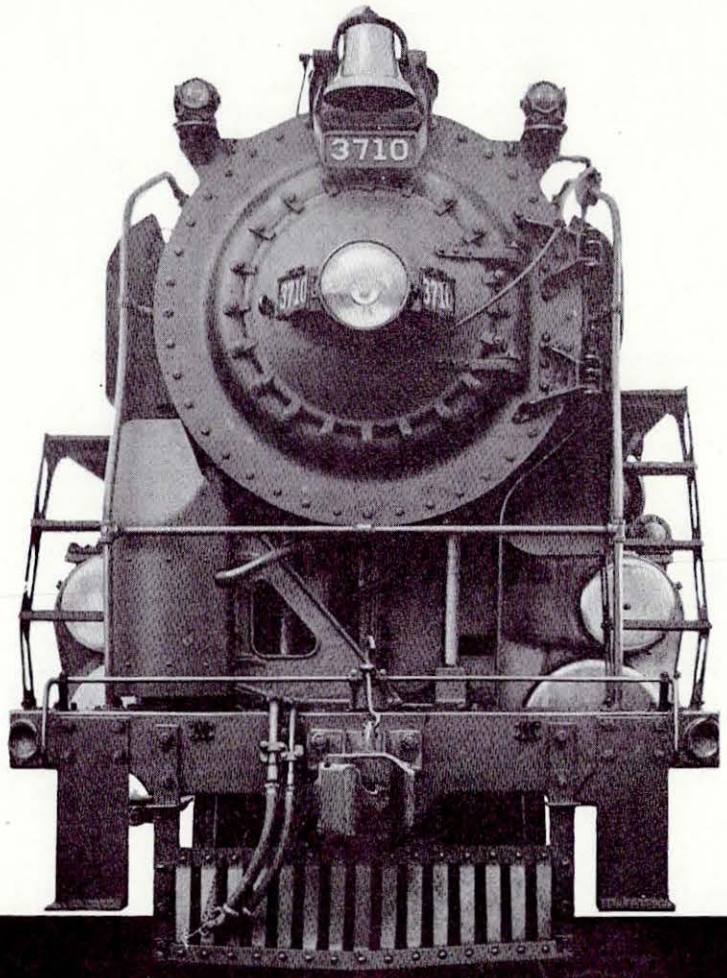
MODERN POWER
Is the Key to Net Profits



Higher mathematics are not needed to determine the advantages of modern power.

Modern power uses less coal per 1,000 ton-miles, it moves more tons per train and it moves capacity trains at faster average speeds between terminals.

It makes greater use of every railroad facility. It gets its train over the road so the following train can use the rails.

It is more economical to operate and costs less to maintain.

Modern power, in every case, shows increased net earnings and yields a handsome return on the investment.

LIMA LOCOMOTIVE WORKS INCORPORATED

LIMA LOCOMOTIVE WORKS INCORPORATED, LIMA, OHIO

tion of the act applicable to motor carriers who transport their own property for sale, was brought by William, Clarence and Walter Manley, who operate the Manley Coal Company, Canon City, Colo. District Judge Cooper, in enjoining enforcement of the law, held the act delegated legislative functions in violation of the constitution, attempted to give the public utilities commission judicial functions, and was unjustly and unreasonably discriminatory in excepting the carriers of farm products and livestock.

On the other hand, in the majority opinion of the supreme court, it was held that "the act goes no further than to assume and properly so a police power in the state to regulate and license or tax the use of the highways when used to transport freight in furtherance of any commercial enterprise. The proprietary right in the highways is not involved. The state in this case has merely regulated and taxed an extraordinary use."

It further held that "the classification in the act is a proper one and the legislature might lawfully exempt farmers hauling their own products from its operations."

Equipment and Supplies

FREIGHT CARS

THE MISSOURI PACIFIC has asked for bids on 200 sheathed box cars of 40 tons' capacity for the Gulf Coast Lines.

IRON & STEEL

THE NEW YORK CENTRAL is inquiring for 190 tons of steel for grade crossing elimination work at Chittenden, N. Y.

THE LONG ISLAND is inquiring for 250 tons of steel for grade crossing elimination work at Smithtown, N. Y.

MISCELLANEOUS

THE TEMISKAMING & NORTHERN ONTARIO has specified that Timken Quad type bearings and boxes be used on nine new coaches being built for it by the National Steel Car Corporation of Hamilton, Ontario.

NEW YORK CENTRAL.—Contracts have been let by this road for furnishing, delivering, installing and testing the following equipment: To the General Electric Company for two 60-cycle, 3,000 kw. mercury arc rectifiers and remote control automatic switchboard apparatus, etc., for Substation No. 6-A at Harmon, N. Y.; to the Westinghouse Electric & Manufacturing Company for one 60-cycle, 3,000 kw. mercury arc rectifier and automatic switchboard apparatus necessary for remote control and changes to air circuit breaker equipment, etc., for Substation No. 6 at Ossining, N. Y.

Supply Trade

William Miller, assistant manager of sales of tin mill products for the **Jones & Laughlin Steel Corporation,** Pittsburgh, Pa., has been appointed manager of sales of sheet and strip products.

The Fulton Sylphon Company, Knoxville, Tenn., which specializes in temperature controlling equipment, has formed a railway equipment division, with headquarters in the Drexel building, Philadelphia, Pa., in charge of **Thomas Kenny.** This division will concentrate upon serving railroad air conditioning control requirements.

Thomas Cruthers, assistant vice-president in charge of sales, has been appointed vice-president of the **Worthington Pump & Machinery Corporation,** Harrison, N. J. Mr. Cruthers was graduated from Stevens Institute of Technology with the degree of mechanical engineer and then entered the employ of the Westinghouse Machine Corporation, serving as superintendent of gas engine erecting. In 1907, in the same capacity, he entered the service of the Snow Steam Pump Works, a Worthington subsidiary, at Buffalo, N. Y. In 1908 he was transferred to the Worthington sales department in the Pittsburgh district, and subsequently to various other district offices until 1927, when he was appointed New York district sales manager. Three years later he was appointed assistant general sales manager and two years later he was appointed assistant vice-president in charge of sales. He will direct the corporation's sales activities in the steam power stations, railroad, waterworks and sewage fields and will also have charge of the general traffic department.

Correction

In the August 1 issue of the *Railway Age,* it was reported that the main plant of the Pacific Car & Foundry Company at Seattle, Wash., was damaged by fire on July 27, a portion of the plant being completely leveled, and that the estimated damage was $700,000. In regard to this report, H. N. Curd, vice-president and general manager of the Pacific Car & Foundry Company, advises as follows:

"On July 26 a fire broke out in our steel foundry and destroyed 160 ft. of roof and side walls at an estimated damage of $25,000. There was no equipment damaged and we were in operation the third morning. This fire in no way interfered with our car building plant or car building program."

OBITUARY

Alfred M. Wood, general superintendent of Teleweld, Inc., with headquarters at Chicago, died of a heart attack at his home in that city on August 10 at the age of 46 years.

John C. Whitridge, president and general manager of the Buckeye Steel Castings Company, Columbus, Ohio, whose death on July 29 was reported in the *Railway Age* of August 1, was 64 years of age and a native of Richmond, Ind. Mr. Whitridge received his higher education at Purdue university, graduating in mechanical engineering with the class of 1895. After

John C. Whitridge

leaving college, he became associated with D. L. Barnes, a consulting engineer at Chicago, and subsequently he became connected with the editorial staff of the Railroad Gazette (now incorporated in the *Railway Age*). In 1902 he joined the Buckeye Steel Castings Company as assistant general manager. In 1920 he was advanced to vice-president, and in 1927 he became president and general manager, the position he was holding at the time of his death. The introduction of steel castings for automatic car couplers and for railroad car trucks were developments that took place during Mr. Whitridge's association with the Buckeye Steel Castings Company. From 1912 to 1915 he was a member of the Executive committee of the Railway Supply Manufacturers Association and at the time of his death he was treasurer and a trustee of the Ohio Manufacturers Association.

Construction

NEW YORK CENTRAL.—This road has let contracts for work in New York City as follows: To James Stewart & Company, Inc., New York, for work in connection with construction of additions, changes or alterations to 320 Park avenue; to John J. Abramsen Company, Inc., New York, for the demolition and removal of the former St. John's Park freight terminal, Hudson and Beach streets; to John H. Knight, Inc., New York, for the construction of high and low pressure water mains in Eleventh and Twelfth avenues between West 29th and West 38th streets, replacing mains in Eleventh avenue between West 30th and West 37th streets.

NEW YORK, NEW HAVEN & HARTFORD.—This company has authorized the reconstruction of bridge No. 9.72 at Orms street, Providence, R. I., at a cost of $70,800.

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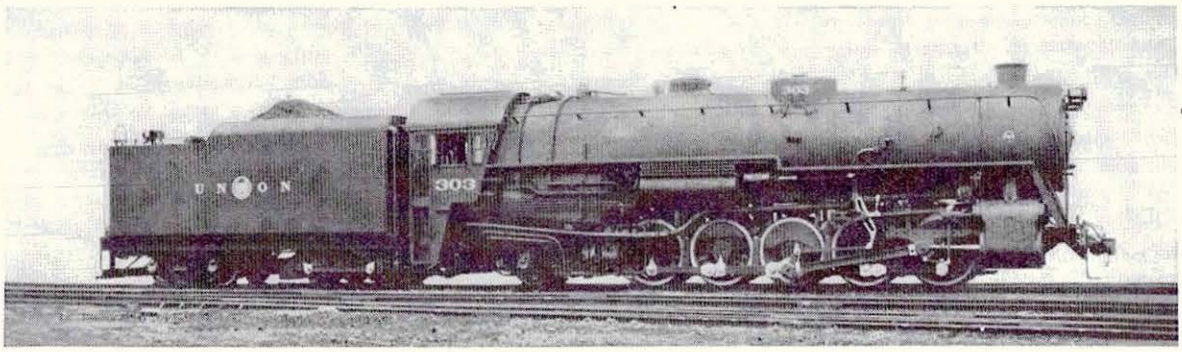
The New

UNION TYPE SWITCHING AND TRANSFER LOCOMOTIVES FOR THE UNION RAILROAD

Employ the

FRANKLIN REVERSIBLE BOOSTER



The new Union Type locomotives recently delivered by Baldwin Locomotive Works to the Union Railroad have a new type of wheel arrangement, 0-10-2, and employ the Franklin Reversible Booster on the front tender truck as an integral part of the design.

These locomotives are designed for general switching and transfer service. With the Booster tractive power of 17,150 pounds, they develop a tractive force of 108,050 pounds in starting.

The Reversible Booster is readily applicable to either the trailer or tender wheels of any locomotive and it is particularly valuable in transfer and hump service.

Because material and tolerances are just right for the job, genuine Franklin repair parts give maximum service life.

FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO MONTREAL

Financial

BOISE & WESTERN.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon as to interstate and foreign commerce its entire line extending from Boise, Idaho, to Star, 16 miles, and from Boise to Onweiler, 9.2 miles.

CHICAGO & EASTERN ILLINOIS.—*Report on Equipment and Maintenance Needs.*—Expenditures amounting to $1,075,000 for equipment are needed to enable this road to take care of its present traffic adequately and from $3,195,000 to $3,295,000 to take care of traffic equal to that of 1930, according to a report made by engineers of the Bureau of Valuation of the Interstate Commerce Commission for consideration in connection with a reorganization plan for the company. It was also calculated there is deferred maintenance amounting to $360,180 on the basis of present traffic and $599,880 on the basis of the traffic of 1930. The Bureau of Valuation also submitted another report on the elements of value in the property as a whole and separately by mortgage divisions as of December 31, 1935. The original cost, exclusive of land, was placed at $63,442,298 and the cost of reproduction less depreciation at $47,011,268.

CHICAGO UNION STATION COMPANY.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $7,000,000 of 3½ per cent guaranteed bonds to provide for the retirement of a like amount of 5 per cent bonds. Kuhn, Loeb & Co. have offered the bonds at 102, subject to the approval of the Interstate Commerce Commission.

FORT WORTH & DENVER CITY.—*R.F.C. Loan.*—The Interstate Commerce Commission has authorized this company to borrow $8,176,000 from the Reconstruction Finance Corporation on 10-year 4 per cent notes, the proceeds to be used to redeem a like amount of outstanding 5½ per cent first mortgage bonds; the plan being a modification of an earlier one whereby the railway proposed to raise this money through sale of 4½ per cent bonds to the R.F.C.

LEHIGH & NEW ENGLAND.—*Equipment Trust Certificates.*—This company has applied to the Interstate Commerce Commission for authority for an issue of $410,000 of 2¾ per cent equipment trust certificates to be used in acquiring 250 steel hopper cars. Authority has also been asked for an issue of $1,000,000 of serial notes, at interest rates ranging from ¾ per cent to 3 per cent, maturing annually beginning September 1, 1937, for the purpose of redeeming as of November 1, 1936, a like amount of 4 per cent equipment trust certificates.

MICHIGAN CENTRAL.—*Abandonment.*—Division 4 of the Interstate Commerce Commission has authorized the abandonment of the Haakwood branch, from Haakwood, Mich., to Afton, 12.75 miles.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon and remove 16.57 miles of its line from Rice Lake, Wis., to Birchwood.

MINNESOTA TRANSFER.—*Stock.*—The Interstate Commerce Commission has authorized this company to issue $758,700 of capital stock to be delivered at par to its nine proprietary companies in liquidation of indebtedness incurred for capital purposes.

MISSOURI PACIFIC.—*Classification of Claims.*—A decision of Federal Judge Faris placing the claim of J. P. Morgan & Company against the Missouri Pacific in the same classification with the claims of the Reconstruction Finance Corporation and the Railroad Credit Corporation, was affirmed by the United States Circuit Court of Appeals in an opinion filed at St. Louis on August 7. The loans made by these companies to the Missouri Pacific, which are involved in the reorganization proceedings of the railroad, consist of notes totaling $23,134,800 held by the Reconstruction Finance Corporation, notes totaling $3,562,000 held by the Railroad Credit Corporation and nine notes totaling $5,850,000 held by J. P. Morgan & Company. Representatives of the latter firm contended that, if these three claims were placed in the same class, the private bank would have little influence in arranging the terms of reorganization, and asked that the claim of J. P. Morgan & Company be placed in a class by itself.

NEW YORK CENTRAL.—*Abandonment.*—This company and the Boston & Albany have applied to the Interstate Commerce Commission for authority to abandon operation of the line of the Boston & Albany between Chatham, N. Y., and Ghent, and to operate over the line of the New York & Harlem.

NEW YORK, CHICAGO & ST. LOUIS.—*Notes.*—The Interstate Commerce Commission has authorized this road to issue and sell $16,000,000 of ten-year 4 per cent collateral trust notes. A group headed by Edw. B. Smith & Co. have offered the notes at par.

NEW YORK, NEW HAVEN & HARTFORD.—*Increase in Salary for General Counsel Authorized.*—Division 4 of the Interstate Commerce Commission has modified its order approving $15,000 a year as the maximum compensation to be paid by the trustees to W. W. Meyer as counsel to authorize an increase to $18,000. The trustees had petitioned the commission to authorize an increase to $20,000, pointing out that Mr. Meyer was performing duties for which much larger salaries had been paid in the past and that they had been increased by the filing of petitions in bankruptcy by the Connecticut Company, the New York, Westchester & Boston, and the Old Colony.

NORTHERN PACIFIC.—*Equipment Trust Certificates.*—This company has applied to the Interstate Commerce Commission for authority for an issue of $3,000,000 of 2¼ per cent equipment trust certificates, to be sold to the highest bidder, in connection with the acquisition of 250 40-ton stock cars, 250 50-ton flat cars, 500 50-ton gondola cars, and 12 4-6-6-4 locomotives.

PENNSYLVANIA.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue and sell $20,000,000 of general mortgage 3¾ per cent bonds, Series C, which had been sold to Kuhn, Loeb & Co., at 99½, subject to approval.

PENNSYLVANIA.—*Acquisition.*—The Interstate Commerce Commission has authorized this company and the Philadelphia, Baltimore & Washington to acquire a line (formerly operated by the Washington, Baltimore & Annapolis) extending from a connection with the P. R. R. at Odenton, Md., to Bowie race track, 6.4 miles.

PENNSYLVANIA.—*Securities.*—The Interstate Commerce Commission has authorized the Little Miami R.R. to issue $5,000,000 of general mortgage series B 4 per cent bonds and $91,700 of 4 per cent special guaranteed betterment stock, to be guaranteed by the Panhandle as lessee, and delivered at par to the Pennsylvania in reimbursement for expenditures for additions and betterments.

PENNSYLVANIA.—*Acquisition.*—Division 5 of the Interstate Commerce Commission has issued an order staying, pending the further order of the commission, the taking effect of the order recommended by Examiner John S. Higgins in a proposed report recommending denial of the application of Scott Bros., Incorporated, for authority to acquire control of the W. G. Corporation through purpose of its stock from the U. S. Truck Lines, Inc.

SOUTHERN PACIFIC.—*Acquisition.*—The Southern Pacific Railroad has applied to the Interstate Commerce Commission for authority to purchase the Biola branch of the Fresno Traction Company, from Biola Junction, Calif., to Biola, 8.68 miles, at a price of $237,199. The line is now operated by the Southern Pacific.

UNION PACIFIC.—*Lease of Pacific & Idaho Northern.*—The Interstate Commerce Commission has authorized the Oregon Short Line to acquire, and the Union Pacific to lease, the railroad properties of the Pacific & Idaho Northern, extending along the Weiser river from Weiser, Idaho, to New Meadows, about 90 miles.

Average Prices of Stocks and of Bonds

	Aug. 11	Last week	Last year
Average price of 20 representative railway stocks..	55.45	54.11	37.08
Average price of 20 representative railway bonds..	81.76	81.13	74.71

Dividends Declared

Cincinnati, New Orleans & Texas Pacific.—5 Per Cent Preferred, $1.25, quarterly, payable September 1 to holders of record August 15.

Cleveland & Pittsburgh.—4 Per Cent Special Guaranteed, 50c, quarterly, payable September 1 to holders of record August 10.

Ft. Wayne & Jackson.—5½ Per Cent Preferred, $2.75, semi-annually, payable September 1 to holders of record August 20.

Rutland & Whitehall.—$1.50, payable August 15 to holders of record August 1.

Texas & Pacific.—Preferred, $2.50, payable August 31 to holders of record August 15.

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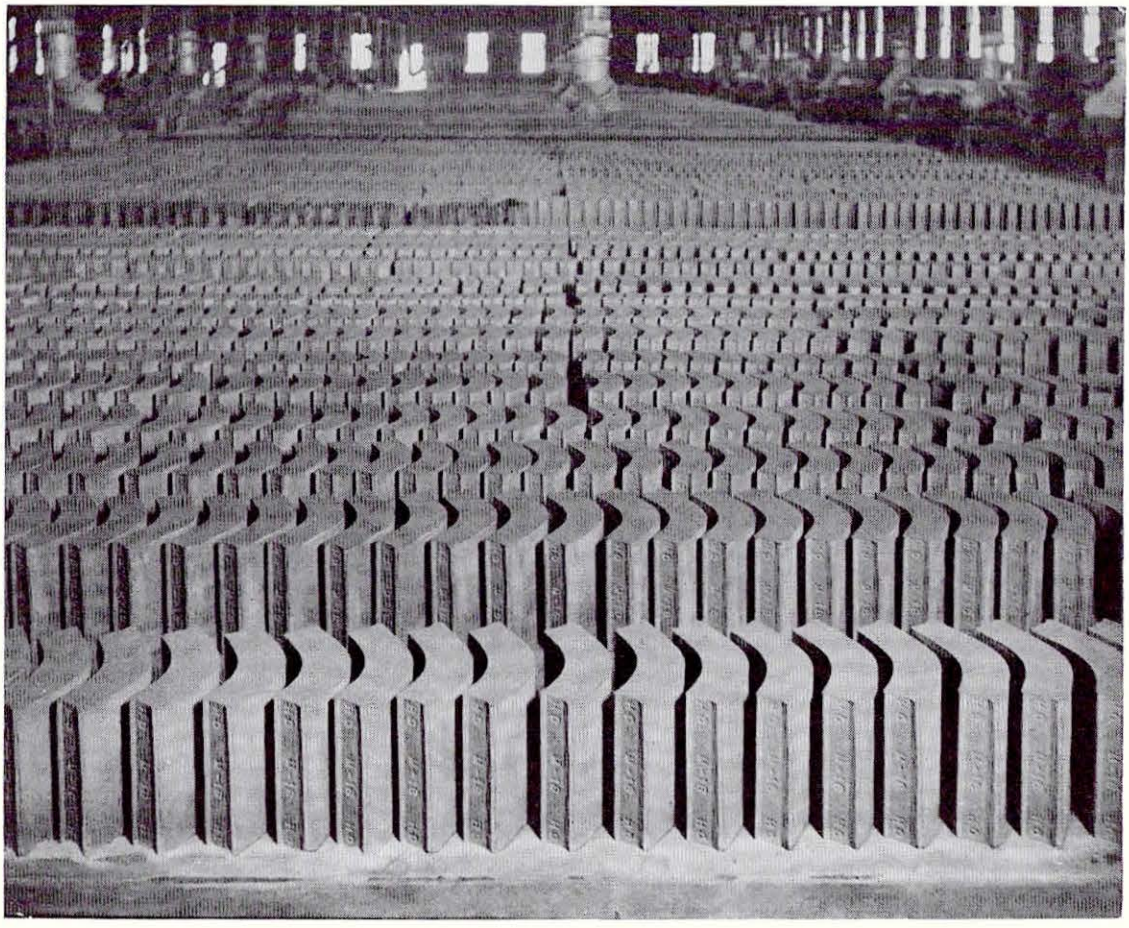
NO. 3 OF A SERIES ON THE MANUFACTURE OF SECURITY ARCH BRICK

Good Arch Brick
CANNOT BE MADE IN A HURRY



Brick ready for stacking in kiln. Large floor area is needed to provide time for drying before firing.

If locomotive arch brick is to deliver long, economical service, it cannot be rushed through any step of its making.

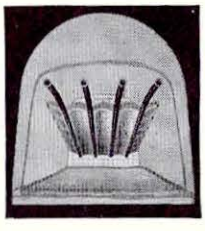
A lot of brick must be moulded ahead; large floor area is needed and ample time must be allowed for drying.

As shown above this important step is fully provided for in the manufacture of Security Arch Brick. It guarantees uniform, dependable brick in the firebox —brick that costs much less per thousand miles of locomotive service.

There's more to Security Arches than just brick

HARBISON-WALKER REFRACTORIES CO.

Refractory Specialists



AMERICAN ARCH CO.
INCORPORATED

Locomotive Combustion Specialists » » »

Railway Officers

FINANCIAL, LEGAL AND ACCOUNTING

T. H. Cooper, auditor of general accounts of the Canadian National, with headquarters at Montreal, Que., has been appointed assistant comptroller, with the same headquarters. The position formerly held by Mr. Cooper has been abolished.

Robert S. Gawthrop, whose appointment as general attorney of the Pennsylvania, with headquarters at Philadelphia, Pa., effective August 1, was noted in the *Railway Age* of July 25, was born in Chester County, Pa., on October 20, 1878. He was graduated from the University of Pennsylvania in 1901, and was admitted to the Chester County bar on October 11, 1904. Five years later he was elected district attorney of Chester County, and in May, 1915, was appointed Judge of the Court of Common Pleas of that county. In 1918, he was appointed first deputy attorney general of Pennsylvania, continuing in that office until his election to the Superior Court of the state four years later. After serving ten years on the Superior Court bench, he resumed private practice in West Chester in January, 1933. Judge Gawthrop has served as the railroad's solicitor in Chester county for the last fourteen months.

Thomas W. Bockes, whose appointment as general solicitor of the Union Pacific, with jurisdiction in Nebraska, Kansas, Iowa, Missouri, Colorado and Wyoming, was reported in the *Railway Age* of August 1, was born on March 20, 1885, at Central City, Neb. Mr. Bockes studied law at the University of Nebraska, graduating with the degree of bachelor of laws in 1908. For three years following his graduation he served with a law firm in Lincoln, Neb., then going to Central City to engage in private practice and serve as local attorney for the Union Pacific. On November 1, 1918, he was sent to Omaha to serve as assistant general attorney for the railroad, being advanced to general attorney for Nebraska on January 1, 1933. On January 1, 1936, he was appointed assistant western general counsel, the position he was holding at the time of his recent appointment as general solicitor with headquarters at Omaha.

Thomas W. Bockes

Orville G. Edwards, whose appointment as tax commissioner of the Chicago, Milwaukee, St. Paul & Pacific was announced in the *Railway Age* of August 8, was born on March 12, 1886, at Scranton, Pa. Mr. Edwards received his legal education at the University of Oregon, graduating with the degree of LL.B. in 1916. He first entered railway service on August 1, 1904, as a clerk in the local office of the Oregon, Washington Railroad & Navigation Company (part of the Union Pacific System) at Pendleton, Ore. Mr. Edwards entered the tax and right of way department of this company, with headquarters at Portland, Ore., on August 1, 1905, and in July, 1916, he was placed in charge of tax matters. On January 1, 1922, he was transferred to the legal department as an attorney with headquarters at Portland. On October 1, 1931, Mr. Edwards went with the Milwaukee as assistant general attorney at Seattle, Wash., the position he was holding at the time of his recent appointment as tax commissioner. For the present his headquarters will be at Milwaukee, Wis., but eventually his office will be moved to Chicago.

Orville G. Edwards

OPERATING

C. B. Wilson, superintendent of transportation of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Minneapolis, Minn., has been granted an indefinite leave of absence because of ill health. Mr. Wilson's duties have been taken over by **E. H. Buhlman,** general superintendent.

R. P. Woodman, chief clerk to the general manager of the New England department of the Railway Express Agency at Boston, Mass., has been appointed superintendent of the Massachusetts-Northern New England division to succeed **H. C. Trombly,** who has been transferred as superintendent to the Boston division to replace **W. A. Morris,** retired city manager at that point. The title of city manager formerly held by Mr. Morris has been discontinued. **Walter H. Tummonds,** traffic agent at Cleveland, Ohio, has been appointed superintendent of the Northern Ohio division, with headquarters at the same point, succeeding **L. W. Prehn,** deceased.

John R. Skillen, who has been appointed superintendent of the Slaton division of the Panhandle & Santa Fe (part of the Atchison, Topeka & Santa Fe System) as reported in the *Railway Age* of July 25, was born on October 6, 1886, at Star City, Ind. Mr. Skillen first entered railway service with the Pennsylvania in 1903. In August, 1911, he became associated with the Santa Fe, and has been with that company continuously to date. Until May, 1913, he served as an operator and wire chief at various locations on the Coast lines and the Western lines, and at the end of this period he was promoted to dispatcher at Raton, N. Mex. Subsequently he served successively as night chief dispatcher and chief dispatcher with the same headquarters, and on August 1, 1920, he was advanced to trainmaster on the New Mexico division. On July 1, 1929, Mr. Skillen was appointed acting superintendent of the Arkansas River division, with headquarters at La Junta, Colo., returning to the position of trainmaster, with headquarters at Las Vegas, N. Mex., on January 1, 1930. On September 1 of the same year, he was transferred to the Western division with headquarters at Dodge City, Kan., where he remained until his promotion to superintendent of the Slaton division with headquarters at Slaton, Tex., which was effective on July 25.

Walter Reese, general manager of the Northern department of the Railway Express Agency, with headquarters at St. Paul, Minn., has been appointed executive assistant, with headquarters at New York, succeeding **W. K. Weaver,** whose appointment as general manager of the Eastern Lakes department was announced in the *Railway Age* of July 11. **W. D. Llewellyn** will succeed Mr. Reese as general manager of the Northern department.

Walter Reese

Mr. Reese began his career in June, 1901, as express clerk and telegraph operator at Owensboro, Ky. Three years later he became an expressman, securing a position in the general agent's office of the Ameri-

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The Superheater

AS A FACTOR IN LOCOMOTIVE DESIGN

Each of the following features is being discussed in this series of advertisements.

Maximum Ton Miles per Hour

•

Boiler Capacity and Tractive Effort

•

Heating Surface and Boiler Capacity

•

Heating Surface and Boiler Efficiency

•

Minimum Draft Loss and Low Back Pressure

•

High Sustained Superheat

•

Higher Superheat and Minimum Steam Consumption

•

Greater Sustained Capacity

•

Reduced Fuel and Water Consumption per Unit of Work Done

•

Total Fuel Consumption of American Railroads

•

Reduced Cost of Locomotive Horsepower

For High Efficiencies Use Elesco Type "E" Superheaters

8

Greater Sustained Capacity

A locomotive properly designed for and equipped with a type "E" superheater will give greater sustained capacity than any other known practical locomotive design in use today.

The records of the Class I railroads during the last ten years have shown a constantly increasing transportation efficiency. This is proof that modern high-capacity locomotives, largely used to handle this traffic, have been to a large extent responsible for this splendid record.

The fact that from 80% to 90% of the modern high-capacity locomotives in freight and passenger service have been equipped with type "E" superheaters, is significant. The record from the Interstate Commerce Commission reports, quoted below, gives the significant facts:

AVERAGE SPEED OF FREIGHT TRAINS

1924	11.5 miles per hour
1926	11.9 miles per hour
1928	12.9 miles per hour
1930	13.8 miles per hour
1932	15.5 miles per hour
1934	15.9 miles per hour

THE SUPERHEATER COMPANY

Representative of American Throttle Company, Inc.

60 East 42nd Street
NEW YORK

ELESCO

Peoples Gas Building
CHICAGO

Canada: The Superheater Company, Limited, Montreal

Superheaters • Superheated Steam Pyrometers • Exhaust Steam Injectors • Feed Water Heaters • American Throttles

(A-1084)

can Express Company at Memphis, Tenn. About a year later he was promoted to the superintendent's staff. He next served as route agent, first at Yazoo City, Miss., and later at Memphis, then becoming chief clerk to the superintendent at the latter point. After serving three years in the latter position, Mr. Reese was appointed secretary to the manager at St. Louis, and the following year he became assistant to the manager. In June, 1918, Mr. Reese was further promoted to assistant to the vice-president, which position he continued to hold through the various reorganiza-

W. K. Weaver

tions of the company from which the Railway Express Agency was developed in 1929. He was appointed general manager in April, 1934, with headquarters at St. Paul, in which position he served until his recent promotion.

Mr. Weaver has been in the express business for approximately 36 years. He began his career in September, 1901, as express messenger for the Southern Express, subsequently serving in various operating positions. When the Adams Express acquired the Southern, Mr. Weaver became general traffic agent for both companies at New York. During the consolidation period of the express companies

W. D. Llewellyn

in 1918, Mr. Weaver went to Richmond, Va., where he organized what was later known as the Kanawha division, of which he later became superintendent, remaining in that position for approximately 15 years. In January, 1933, he was appointed to the vice-president's staff in Atlanta, Ga., and in April, 1934, he became superintendent of organization, reporting to the president, at New York. Mr. Weaver became executive assistant at the same point in June, 1935, serving in that position until his recent appointment as general manager of the Eastern Lakes department to succeed G. T. Carlin, deceased.

W. D. Llewellyn has been in the express business for approximately 38 years. He started as a platform man in Monett, Mo., in 1898, later serving successively as driver, clerk and messenger, at the same point, and in the superintendent's office at St. Louis. Mr. Llewellyn became route agent at Tulsa, Okla., in 1908, later serving successively in the same position at Little Rock, Ark., St. Louis, Mo., and Decatur, Ill. From the latter time until July, 1918, when he became superintendent, he had various assignments dealing with accounting, claim, loss and damage prevention and efficiency work. Mr. Llewellyn served as superintendent successively at Sioux Falls, Sioux City, and St. Paul, until June, 1935, when he was transferred to the president's office.

TRAFFIC

J. J. Heimes has been appointed general agent on the Great Northern at Butte, Mont., to succeed **W. L. Rooth**, deceased.

John P. Derham, Jr., whose appointment as assistant freight traffic manager of the Seaboard Air Line, with headquarters at Jacksonville, Fla., was reported in the *Railway Age* of August 8, was born at Green Sea, S. C., on April 27, 1896. He was graduated from Clemson College (Clemson, S. C.) in June, 1917. Prior to entering railway service, Mr. Derham served for a short time in the United States Army. He entered the service of the Seaboard Air Line at Jacksonville, Fla., as development agent in August, 1920. Two years later he became contracting freight agent at the same point. He was appointed commercial agent in March, 1927, serving in that position until April, 1930, when he was promoted to the position of district freight agent at Jacksonville, the position he held at the time of his recent promotion.

Lewis Palmer King, whose appointment as assistant freight traffic manager of the Seaboard Air Line, with headquarters at Norfolk, Va., was reported in the *Railway Age* of August 8, was born at Portsmouth, Va., on May 2, 1885. He was educated in the grammar and high schools and entered railroad service in 1899 as clerk for the Seaboard Air Line at Portsmouth. He later served with the same road as chief clerk at Norfolk, Va. In January, 1915, Mr. King became commercial agent for the Savannah & Statesboro (discontinued), later serving in the same capacity for the Georgia & Florida at Augusta, Ga., and Valdosta. From August, 1918, to August, 1919, he was with the United States War Department and on the latter date he became field accountant for the Seaboard Air Line at Raleigh, N. C. He served as commercial agent for the S. A. L. consecutively at August, Ga., and Greenville, S. C., from March, 1920, to May, 1929, at which time he was promoted to assistant general freight agent for that road at Charlotte, N. C., the position he held at the time of his recent promotion.

Schuyler C. Matthews, assistant freight traffic manager of the Pennsylvania, with headquarters at Chicago, has retired after 54 years' service with this company. Mr. Matthews was born on September 7, 1868, at Cincinnati, Ohio, and entered the service of the Pennsylvania on June 13, 1882, as a clerk and telegraph operator at Columbia, Ohio, now a part of Cincinnati. Two years later he was assigned to the office of the division freight agent at Cincinnati, where subsequently he was advanced to chief clerk and thence to division freight agent on February 1, 1905. On February 16, 1914, Mr. Matthews was appointed assistant general freight agent at Pittsburgh, Pa., and on January 1, 1917, he was further advanced to general freight agent. Seven years later he was promoted to assistant freight traffic manager at Pittsburgh, and on April 1, 1931, he was transferred to Chicago.

C. L. Senter, whose appointment as general freight agent of the Seaboard Air Line, with headquarters at Norfolk, Va., was reported in the *Railway Age* of August 8, was born in Blue Springs, Tenn., on November 23, 1887. He received a high school education and entered the service of the Cincinnati, New Orleans & Texas Pacific as messenger-clerk in 1903. He entered the service of the Alabama Great Southern as rate clerk in 1906 and the following year served in a similar capacity with the Seaboard Air Line. From 1909 to 1913, Mr. Senter was consecutively route clerk for the Atlantic Coast Line, and rate clerk for the same road at Wilmington, N. C., and Savannah, Ga. On the latter date he was appointed chief clerk to the traffic manager of the Georgia, Florida & Alabama and in 1920 he became traffic manager for the same road. In 1924 Mr. Senter became assistant general freight agent for the Seaboard Air Line at Jacksonville, Fla., and in 1926 he was transferred in the same position to Norfolk, Va., where he remained until his recent promotion.

Paul P. Hastings, who has been appointed assistant freight traffic manager of the Atchison, Topeka & Santa Fe, with headquarters at San Francisco, Cal., as reported in the *Railway Age* of August 1, was born on October 22, 1872, at Farmington, Kan., and entered the service of the Santa Fe in August, 1891, as a revising clerk at Topeka, Kan. Four years later he went with the Santa Fe, Prescott & Phoenix (now part of the Santa Fe) as a rate clerk at Prescott, Ariz., and in 1898 he became traffic manager for a copper company at Jerome, Ariz. From 1900 to 1902 he served as auditor and general freight and passenger agent for the United Verde & Pacific (now abandoned) at Jerome, returning to the service of the S. F. P. & P. in 1903 as an auditor at Prescott. Four years later he was advanced to general freight and passenger agent with the same headquarters, and in 1912 he returned to the Santa Fe as as-

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sistant general freight agent at San Francisco. During the World War Mr. Hastings served with the United States Railroad Administration as assistant director of traffic at Washington, D. C. From

Paul P. Hastings

1920 to 1922 he was with the standing rate committee of the Transcontinental Freight Bureau at Chicago, then returning to the Santa Fe as general freight agent at San Francisco, the position he was holding at the time of his recent appointment as assistant freight traffic manager.

M. C. Burton, who has been appointed general freight and passenger agent on the Atchison, Topeka & Santa Fe at Amarillo, Tex., as reported in the *Railway Age* of August 1, has been associated with this railroad for more than 35 years. He was born on May 25, 1881, in Cloud county, Kan., and first entered the service of the Santa Fe in 1901 in a clerical capacity at Kansas City, Mo. Four years later he was advanced to city freight agent at Kansas City, and in 1908 he was made traveling freight agent at Wellington, Kan., being transferred to Hutchinson, Kan., in 1916. In the following year Mr. Burton was ap-

M. C. Burton

pointed general agent at Atchison, Kan., and in 1920 he was made division freight agent at Oklahoma City, Okla. From 1922 until his recent appointment as general freight and passenger agent at Amarillo, he served as general industrial agent at Topeka, Kan.

MECHANICAL

J. E. Davenport, assistant to vice-president and general manager of the New York Central System, has been appointed assistant chief engineer motive power and rolling stock, with headquarters at New York.

M. F. Smith, roundhouse foreman on the Atchison, Topeka & Santa Fe at Los Angeles, Cal., has been appointed acting master mechanic of the Arizona division, with headquarters at Needles, Cal., succeeding **R. Tuck,** transferred.

J. T. Slaven, master mechanic of the Coast division of the Southern Pacific, with headquarters at Bayshore, Cal., has been retired on pension. **A. B. Wilson,** master mechanic of the Portland division, with headquarters at Brooklyn, Ore., has been transferred in the same capacity to the Coast division to replace Mr. Slaven and he will in turn be succeeded by **F. A. Schilling.**

H. W. Ridgway, superintendent of motive power of the Colorado & Southern, with headquarters at Denver, Colo., retired on August 1. Mr. Ridgway was born on July 17, 1866, at Delaware Water Gap, Pa., and entered railway service in November, 1881, as a mechanical apprentice on the Denver & Rio Grande, serving in various capacities in the mechanical departments of this company and of the Mexican Central until 1901 when he was appointed superintendent of machinery of the El Paso & Northeastern (now part of the Southern Pacific), later being appointed superintendent of the contract shop. In 1904 he returned to the Mexican Central as superintendent of shops at Aguas Calientes, Mex., and from 1906 to 1913 he served as master mechanic on the Colorado & Southern and the Atchison, Topeka & Santa Fe at Denver. At the end of this period he was appointed superintendent of motive power of the C. & S., which position he held until his retirement. From 1924 to 1932 he also served as assistant to the superintendent of motive power of the Chicago, Burlington & Quincy.

ENGINEERING AND SIGNALING

H. F. Sharpley, whose appointment as chief engineer for the Central of Georgia, with headquarters at Savannah, Ga., was noted in the *Railway Age* of July 18, completed a course in civil engineering at the University of Pennsylvania. He entered railroad service in 1896 and served with the Pennsylvania and Erie. Mr. Sharpley entered the service of the Central of Georgia in 1899 and, after serving in various capacities in the engineering department, was appointed principal assistant engineer in 1909. On June 1, 1926, he was promoted to assistant chief engineer, the position he held until his appointment as chief engineer.

Thomas Z. Krumm, principal assistant engineer of the Minneapolis, St. Paul & Sault Ste. Marie, whose appointment as chief engineer of the Soo Line and of the Duluth, South Shore & Atlantic was reported in the *Railway Age* of August 8, was born on July 20, 1882, at Columbus, Ohio. Graduating from Ohio State university in 1902, Mr. Krumm entered the service of the Chicago Great Western in the same year as a resident engineer. From April, 1905, to August, 1915, he was connected with the Northern Pacific as a locating engineer and assistant engineer on construction, then going with the Chesapeake & Ohio Northern (part of the Chesapeake & Ohio) as a resident engineer on construction. During the World War he served with the United States Army as captain of engineers, returning to railway service in August, 1919, in the valuation department of the Northern Pacific. In May, 1920, he entered the service of the Soo Line as principal assistant engineer, which position he held continuously until his recent appointment as chief engineer of this company and of the D. S. S. & A.

William C. Johnson, whose appointment as superintendent of telegraph and signals of the Chicago, St. Paul, Minneapolis & Omaha, with headquarters at St. Paul, Minn., was reported in the *Railway Age* of August 8, has been connected with this company for 37 years. He was born at Harveyville, Kan., and after a business

William C. Johnson

college education he studied electrical engineering through the International Correspondence School. Mr. Johnson entered the service of the Omaha in 1899 as an apprentice telegraph operator, and from 1900 to 1903 served as a telegraph operator and station agent. At the end of this period he entered the signal department as a maintainer, and in 1907 he was made signal foreman. Three years later he was further advanced to signal supervisor, and in 1912 he was appointed general signal supervisor with headquarters at St. Paul, the position he was holding at the time of his recent appointment as superintendent of telegraph and signals, which became effective on July 26.

OBITUARY

Z. H. Sikes, assistant engineer of structures of the New York Central, with headquarters at New York, died on August 1.

Gerhardt E. Fluth, division storekeeper on the International-Great Northern, with headquarters at San Antonio,

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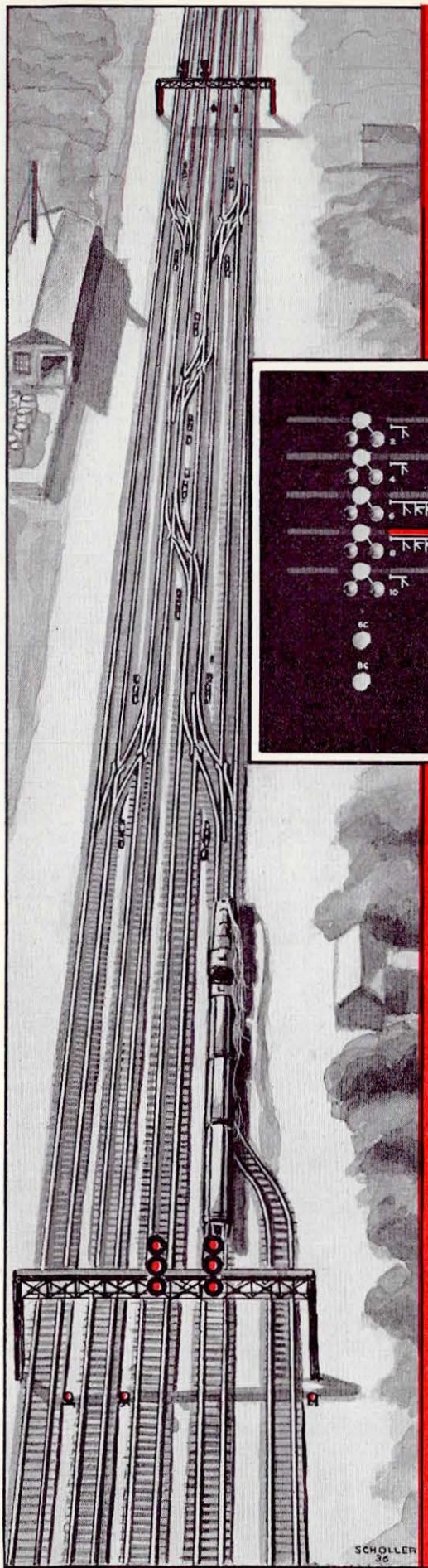

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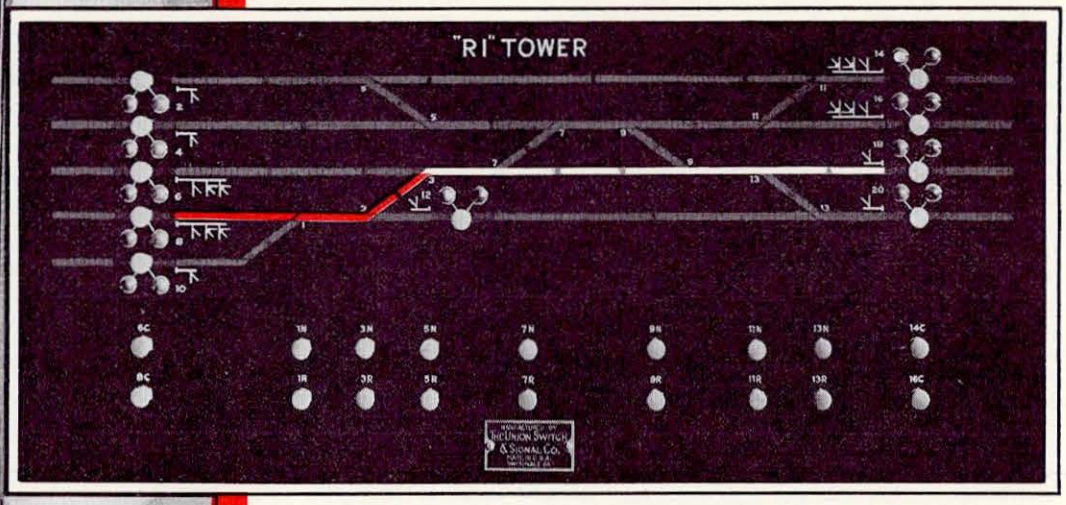

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Tex., died on July 29 in that city, at the age of 44 years.

Frank J. Vanderblue, assistant general freight agent in charge of rate matters for the Chesapeake & Ohio at Chicago, died on August 6 in a hospital at Evanston (a suburb of Chicago) at the age of 74 years.

Frederick E. Schall, consulting bridge engineer for the Lehigh Valley, with headquarters at Bethlehem, Pa., died in that city on August 6. Mr. Schall entered the service of the Lehigh Valley in 1883 as draftsman in the chief engineer's office, subsequently serving in various positions until 1899, when he was appointed bridge engineer. He was appointed consulting bridge engineer in 1929.

Col. W. B. Causey, who was formerly connected with various middle-western railroads in engineering and operating capacities, died at Chicago on August 10 at the age of 71 years. At the time of his death, Col. Causey was vice-president of the White Construction Company and the M. E. White Company, general contractors. Born in Suffolk, Va., Col. Causey spent many years in railroad service. He served the Chicago & North Western as a roadmaster and later as assistant division superintendent, then going with the Chicago Great Western, where he held the positions of division engineer, engineer maintenance of way and superintendent. During the war Col. Causey served in France as a captain of the 17th regiment of engineers. Following the war he became technical adviser on railroad matters to the Austrian government and gained prominence for his work in that capacity. From 1923 to 1925 he was city manager of Norfolk, Va. Since the latter year he has been connected with the White Construction Company and the M. E. White Company.

William A. Webb, who served in executive capacities with various railroads in the southwest, and who later became chief commissioner of the State Railways of South Australia, died on August 9 at Dallas, Tex. At the time of his death Mr. Webb was general manager of the Texas Centennial Exposition. He was born on May 16, 1878, at Eaton, Ohio, and first entered railway service on October 16, 1890, with the Colorado Midland (now part of the Colorado & Southern), serving in various clerical capacities until 1900, when he went with the Colorado & Southern as secretary to the president and general manager. Subsequently he was made chief clerk to the vice-president and general manager and in October, 1905, he became assistant to the vice-president of this company. In June, 1911, Mr. Webb went with the Texas Central (now part of the Missouri-Kansas-Texas) as general manager, leaving this company in the following year to enter the service of the Missouri-Kansas-Texas as assistant to the president. After a few months in this position he was made general manager, with headquarters at Dallas, Tex., and in 1915 he was advanced to vice-president. From October, 1915, to July, 1918, Mr. Webb served as vice-president in charge of operations for the receiver of the Katy and as chief operating officer. During federal control of the railways he was general manager of a group of lines in the southwest, including the Katy, and from March, 1919, to March 1, 1920, he served on Board of Adjustment No. 1 of the United States Railroad Administration at Washington, D. C. At the end of this period he entered the service of the St. Louis Southwestern as vice-president and general manager, and for a short period during 1922 he was president of the Cambria & Indiana. In September of that year he was appointed chief commissioner of the State Railways of South Australia, which position he held for a number of years.

William C. Maxwell, chief traffic officer of the Wabash, with headquarters at St. Louis, Mo., died on August 5 in that city after a long illness. Mr. Maxwell had been in railway service for about 55 years. He was born on February 20, 1865, at Keokuk, Iowa, and first entered railway service in 1881 as a messenger and clerk in the local freight office of the Chicago, Burlington & Quincy at Keokuk. In 1884 he entered the general freight and ticket office of the St. Louis, Keokuk & North Western (part of the Burlington) and in 1889 he was made chief clerk in the general freight office of this road. In 1890 Mr. Maxwell became general agent for the Burlington at Keokuk and in 1902 he was advanced to assistant general freight agent at St. Louis, being transferred to St. Joseph, Mo., in 1904. In the following year he entered the service of the Wabash as assistant general traffic manager, and in 1908 he was promoted to general traffic manager of this road with headquarters at St. Louis. In 1915 he was made vice-president in charge of traffic of the Wabash, holding this position, except for a period during federal control of the railroad when he served as traffic manager, until his appointment as chief traffic officer at the time the Wabash went into receivership late in 1931.

Charles R. Capps, whose death on July 31 at his home in Norfolk, Va., was reported in the *Railway Age* of August 8,

Charles R. Capps

was born in that city on March 4, 1871. He was educated at Roanoke College and entered railway service as messenger for the Seaboard & Roanoke (now Seaboard Air Line) in 1888. He subsequently served as clerk in the general freight office of the same road. From 1895 to 1900 he was general freight agent for the Seaboard Air Line, then becoming general freight agent for the combined S. A. L. system. From July to December, 1909, Mr. Capps served as freight traffic manager for the receivers of the road. On the latter date he was appointed vice-president. He was advanced to the position of first vice-president of the road in 1915. During the period of federal control of the railroads Mr. Capps served as traffic assistant for the Railroad Administration, resuming his duties as first vice-president of the S. A. L. upon termination of federal control. Prior to Mr. Capp's retirement from active service on July 16, he had served for some time as chief traffic officer of the road, under the receivers. In addition to his duties with the S. A. L. Mr. Capps also served as a director for the Fruit Growers Express and the Railway Express Agency, Inc.

Samuel Lynn, superintendent rolling stock, Pittsburgh & Lake Erie, died suddenly on August 9. Mr. Lynn was born at Pittsburgh, Pa., August 2, 1869, and received his education in the public schools

Samuel Lynn

of that city. He entered the service of the Pittsburgh & Lake Erie in 1885 as a laborer, advancing as car repairman, car inspector, shop inspector and gang foreman until September 1, 1893, when he was made foreman of passenger cars at the Pittsburgh terminal. He was promoted to the position of master car builder September 1, 1908, with offices at McKees Rocks, Pa., remaining in that position until February 1, 1927, when he was advanced to the position of superintendent of rolling stock, with headquarters at the same place. Mr. Lynn was for many years active on committees of the Master Car Builders' Association and its successor, the Mechanical Division of the A.A.R. He has been chairman of the Committee on Loading Rules since 1928. It has always been difficult to make a satisfactory report for this committee on the floor of the convention because of its great detail. Mr. Lynn, however, was unusually successful in making an intelligent, clean-cut presentation.

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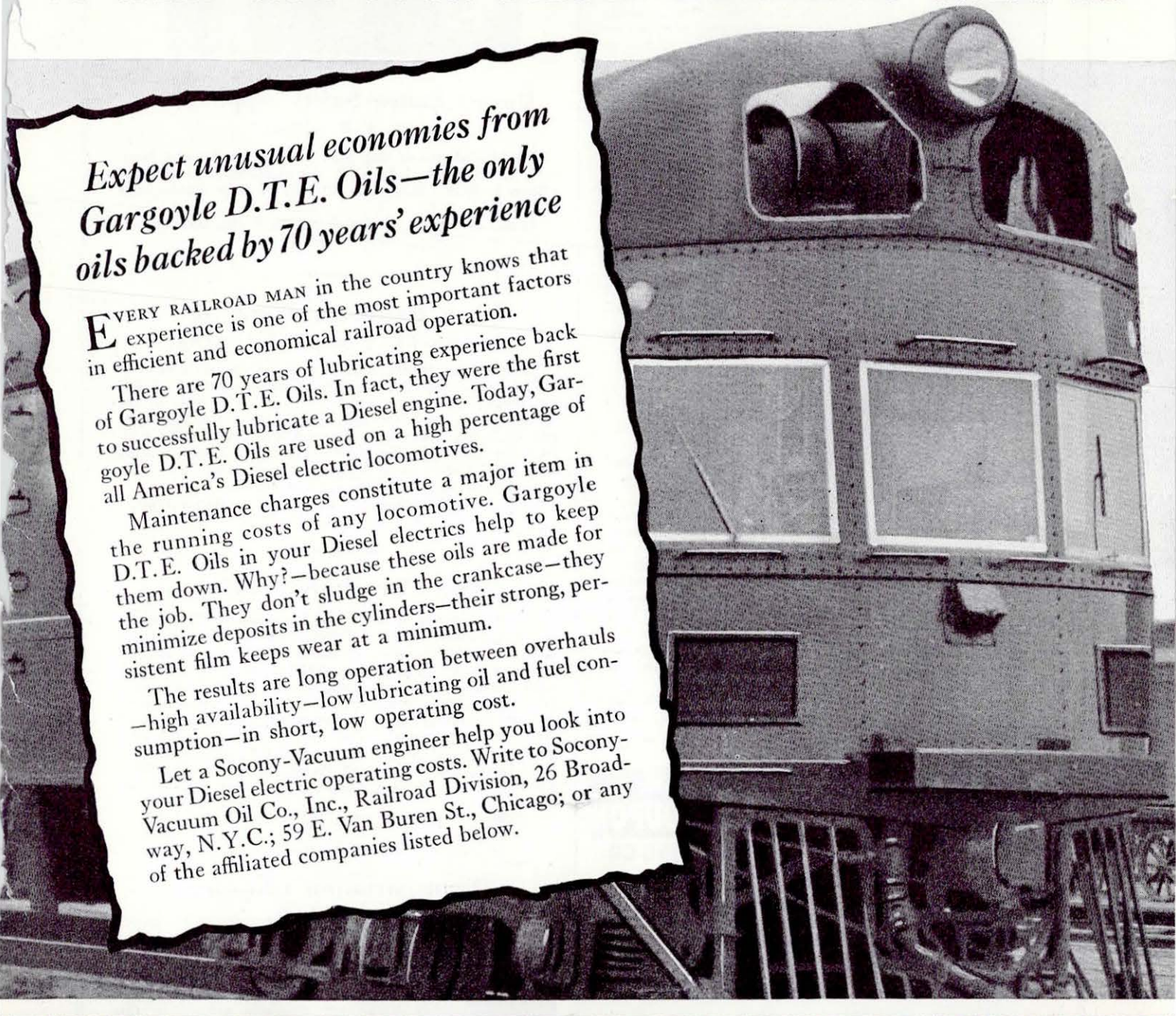

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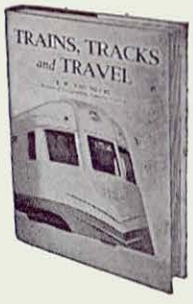

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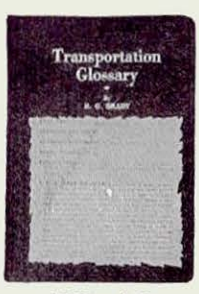

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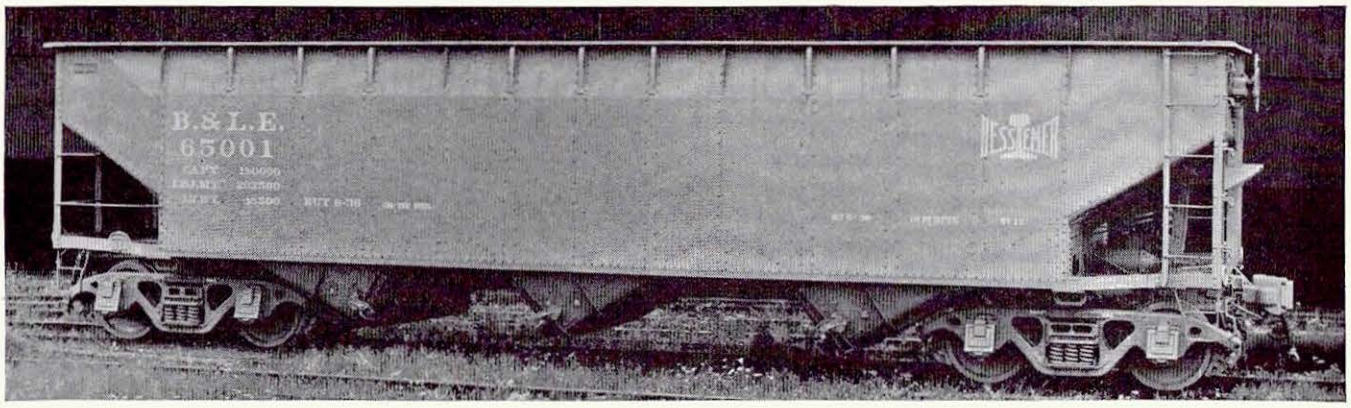

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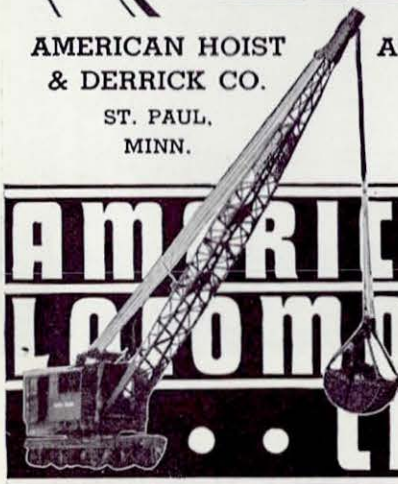

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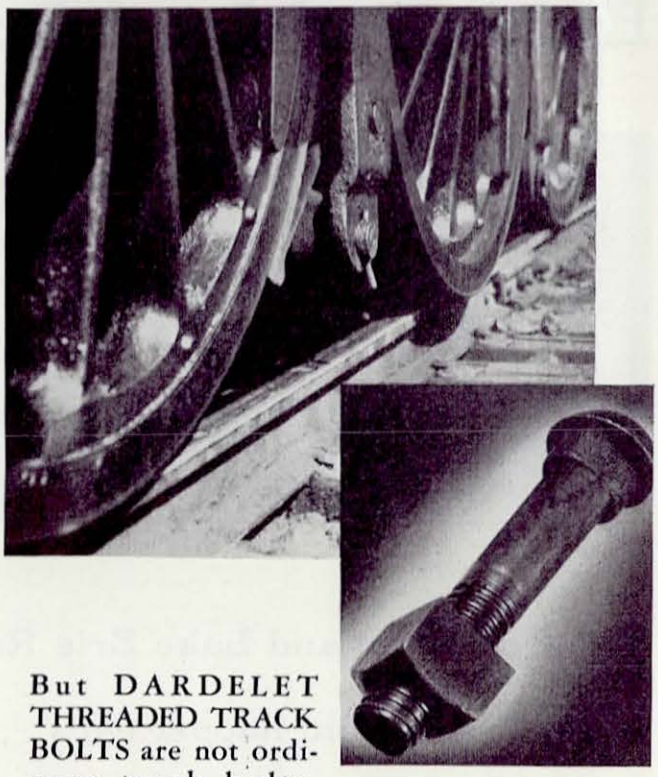

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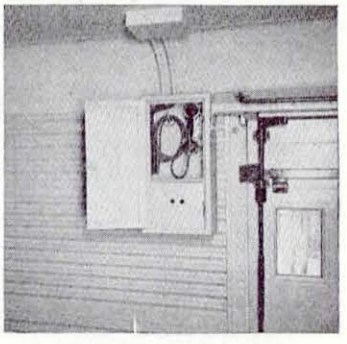

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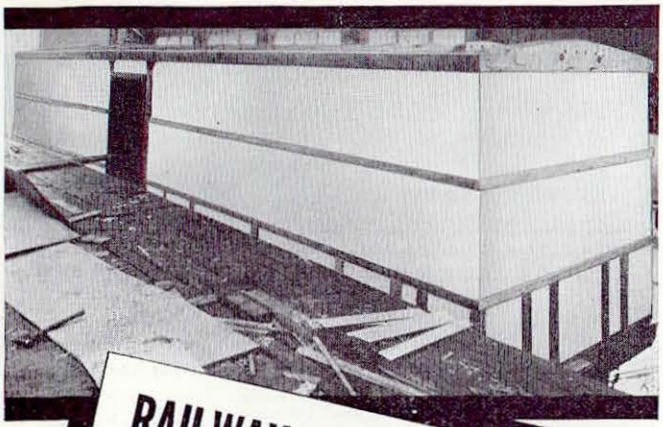

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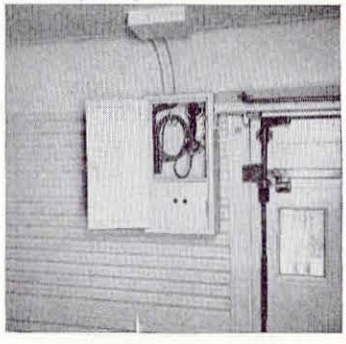

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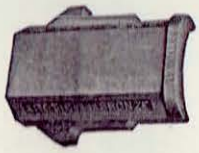

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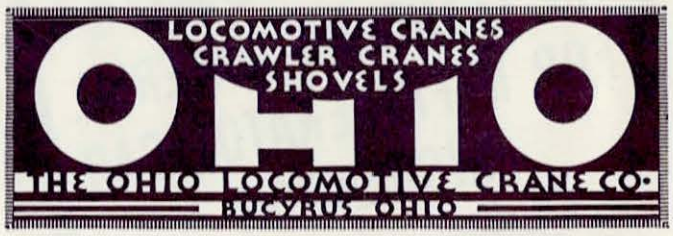

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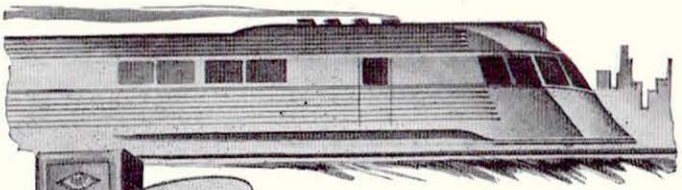

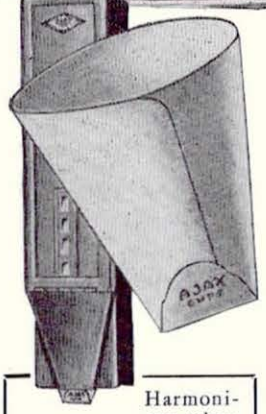

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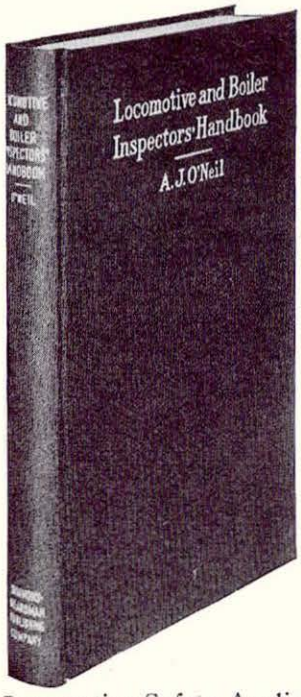

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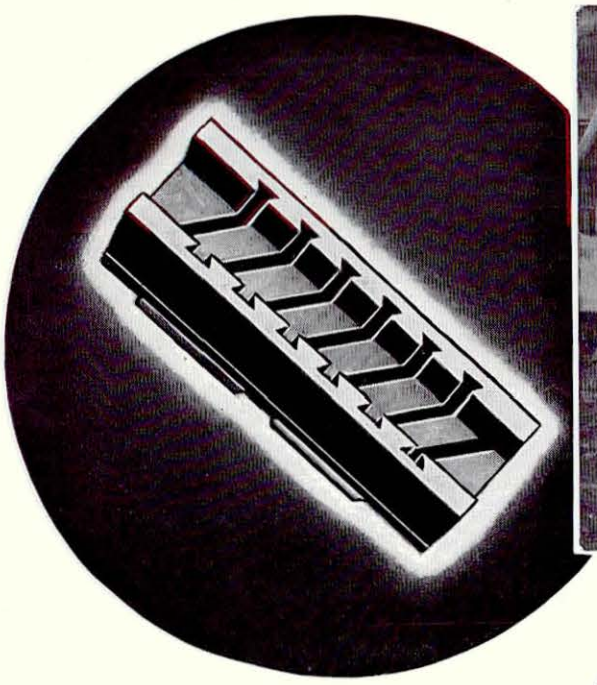

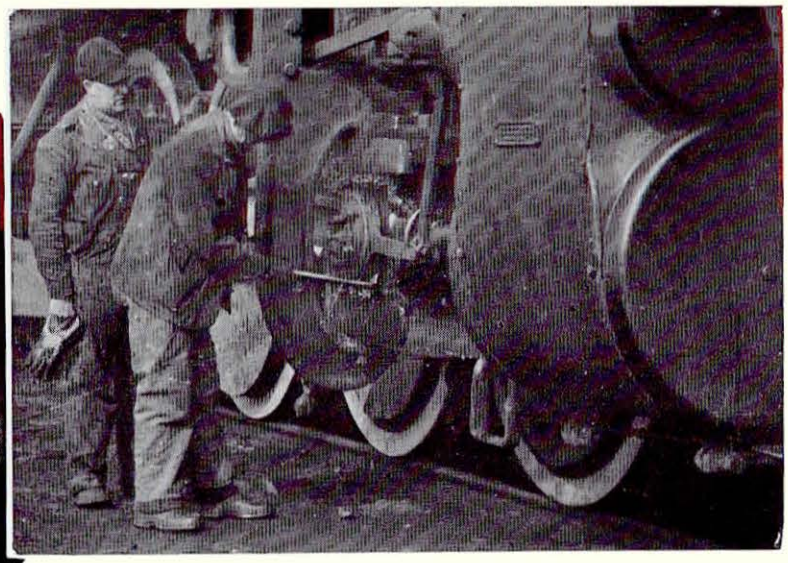

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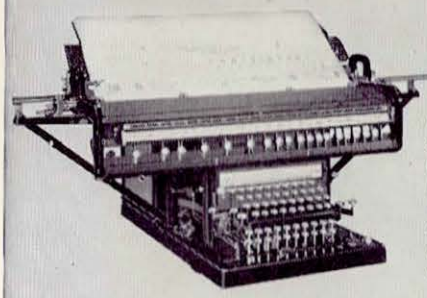

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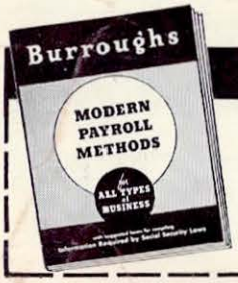

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